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OF

MEDICAL SCIENCE.

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OF

MEDICAL SCIENCE;

CONSISTING OF

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REVIEWS, RETROSPECTS, AND REPORTS,

INCLUDING THE

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FEBRUARY 1, 1848.

PART I.

ORIGINAL COMMUNICATIONS.

ART. I.—*A Case of Rupture of the Chordæ Tendineæ of the Tricuspid Valve of the Heart, with Remarks.* By ROBERT BENTLEY TODD, M. D., F. R. S., Fellow of the College of Physicians, London, Physician to King's College Hospital, and Professor of Physiology in King's College, Honorary Member of the Pathological Society of Dublin, &c. &c.

INJURY and disease affect the valves of the right side of the heart less frequently than those of the left. The progress of our knowledge, derived from *post mortem* investigation, however, contradicts the opinions formerly held that diseased states of the right side of the heart, especially as affecting the valves, are of extremely rare occurrence. My experience has long since led me to the opinion that it is an error to suppose that the right side of the heart has any peculiar exemption from disease, as Bichat affirmed, and his followers repeated. The truth of this matter seems to be, that in the chronic mor-

bid changes to which the valves are liable, due to deposits of abnormal matters, whether interstitial or superficial, the right side is *later* than the left, and that it is not uncommon to find both sides similarly affected, the valves of the right side presenting an earlier stage of the deposit than those of the left; but that *acute* affections of the endocardium are of extremely rare occurrence in the right ventricle or auricle. The greater force exerted by the left ventricle of the heart, estimated by Valentin at one-fiftieth of the weight of the body, while that of the right ventricle is only one-hundredth part of the same, and the greater quantity of muscle in the former than in the latter, estimated by the same physiologist to be in the left ventricle double that of the right, denote a greater activity of nutrition on the one side than on the other, and, therefore, a greater liability to abnormal formations.

Rupture of the chordæ tendineæ is a rare lesion on either side of the heart, but particularly so on the right side. Nor is this to be wondered at if we reflect on the conditions which would be likely to produce such a lesion. It is probable that in every instance the immediate cause would be an extreme tension of the tendon or tendons; this could only take place during the diastolic distension of the ventricle when the auriculo-ventricular valves would be stretched by the contained blood. If there be any considerable obstacle to the escape of the blood from the ventricle, this tension would be prolonged, and perhaps increased, and, under the pressure thence resulting, the chordæ tendineæ would give way. A state of general debility, or the existence of disease of the tendinous cords, would, of course, be favourable to the rupture. A morbid state of the tendinous cords frequently accompanies that of the valves. This is much more common on the left side than on the right, hence, probably, the much greater frequency of this lesion on the left side, because the cords are more frequently in a state favourable to the production of a solution of continuity by violence.

The following case affords the most complete example I

have met with of ruptured tendinous cords of the tricuspid valve.

Edward Ingram, aged 21, was admitted into King's College Hospital on the evening of the 8th of March, 1847, in the following condition:

He was extremely pallid, anæmic, with general anasarca, the scrotum was enormously distended, and the abdominal cavity was filled with water. There were great enlargement and induration of the liver: this organ descended considerably, fully two inches below the margin of the ribs. The anasarca was so considerable in the neck that the condition of the jugular veins could not be ascertained. The patient was much troubled with a frequent hacking cough; his respiration was rapid; and he was unable to lie down.

He gave the following history of himself:

In November, 1844, he was stabbed in the right side, a little below the mamma, in a riot with some of his companions, on which occasion he was greatly alarmed; he lost a good deal of blood from the stab, and, as it was succeeded by pleurisy in the situation of the wound, he lost more blood by several venesections which were practised for the cure of the inflammation of the pleura. The pleuritic attack was followed by a state of very obstinate costiveness, which was overcome by the use of enemata, and a considerable quantity of fetid clotted blood was passed by stool.

Four weeks after the receipt of the injury he vomited a large quantity of blood after having been extremely faint for some hours before, and he also passed some by stool; the bleedings both by stool and vomiting have occurred frequently since, with intervals of about a fortnight, during which there was a cessation of hæmorrhage. For two months before his admission there had been no appearance of blood in his stools, and three months have elapsed since he vomited blood.

During the last month dropsy had come on rapidly, beginning in the face and upper extremities. The face and neck

were very much swollen at the time of his admission, so that no sign of veins could be detected in the neck. The breathing was rapid, 40 in a minute; *in front*, the respiratory murmur was loud and puerile; *posteriorly*, feeble and crepitant, in consequence, no doubt, of an œdematous state of the lungs. He was supported in a semi-recumbent position by pillows. The impulse of the heart was considerable, and could be seen and felt over a great extent of surface, accompanied by a thrill very sensible to the hand, both at the apex and at the base. Percussion was dull over a greatly increased surface in the præcordial region, and the heart's beats were seen and felt in the scrobiculus cordis. On auscultation, a bellows sound was heard very loud at the apex of the heart, very distinct also over the sternum. A second bellows sound, of different tone and less intense, was audible at the base of the heart, and in the course of the aorta. Both sounds were systolic. The second sound of the heart was natural, but feeble; pulse small, thready, and very compressible. Urine scanty, clear, and free from albumen; the addition of liquor potassæ occasioned an abundant phosphatic precipitate, which was dissolved by nitric acid.

The patient survived his admission into the hospital only five days, during the greater part of which time his breathing was so distressing and the dropsy so great as to render any complete auscultation of the chest impossible.

There was a combination of circumstances in this case which rendered it extremely difficult to form a satisfactory and precise diagnosis. I, therefore, did not attempt one. The patient was so weak that frequent or minute examinations of him were impossible. I found, however, sufficient evidence of enlarged heart, in the extent of the dulness, and the increased force and extent of the impulse; and I came to the conclusion that the enlargement was due to hypertrophy and dilatation of both ventricles; the dilated condition of the right ventricle was sufficiently manifest from the extension of the heart into the region of the scrobiculus, where its

beats could be distinctly seen and felt, and from the great extent of the dropsy, which is so apt to occur when there is dilatation of the right ventricle. The veins of the neck having been obscured by the anasarca in that region, the existence of venous regurgitation could not be satisfactorily ascertained.

The bellows murmur, so loud over the point of the heart, indicated imperfection of one or other of the auriculo-ventricular valves; probably of that of the left side, since it is more liable to a morbid state. It did not, however, escape my notice that this sound was very distinct over the sternum, and that it possibly might be developed in the tricuspid orifice. But the rare occurrence of any lesion in that orifice, sufficient to develope bellows murmur, rendered such a diagnosis improbable, while the enlargement of the right ventricle, and probably of the left, and the extension of the former to the apex of the heart, would materially conduce to the propagation of sound generated in the mitral orifice, to the right side. The murmur in the aortic orifice was not necessarily indicative of any morbid lesion of that orifice, as the state of extreme anæmia which the patient exhibited was sufficient to give rise to it. Both bellows sounds were, no doubt, much increased in intensity by the anæmic state. I constantly find that mitral murmurs become greatly augmented in anæmia; and when the anæmic state goes off, the bellows murmur becomes greatly diminished. I may remark, however, that a bellows sound will not occur in the mitral orifice from anæmia, as we know it often does in the aortic orifice, simply because the pallid and watery state of the blood cannot destroy the perfection of the mitral valves. The existence of mitral bellows murmur is, in my judgment, unequivocal evidence of mitral imperfection, but a state of anæmia may cause an increase of the intensity of the murmur.

The patient was treated with diuretics and mild stimulants. The dropsy, however, increased rapidly, and, his breathing be-

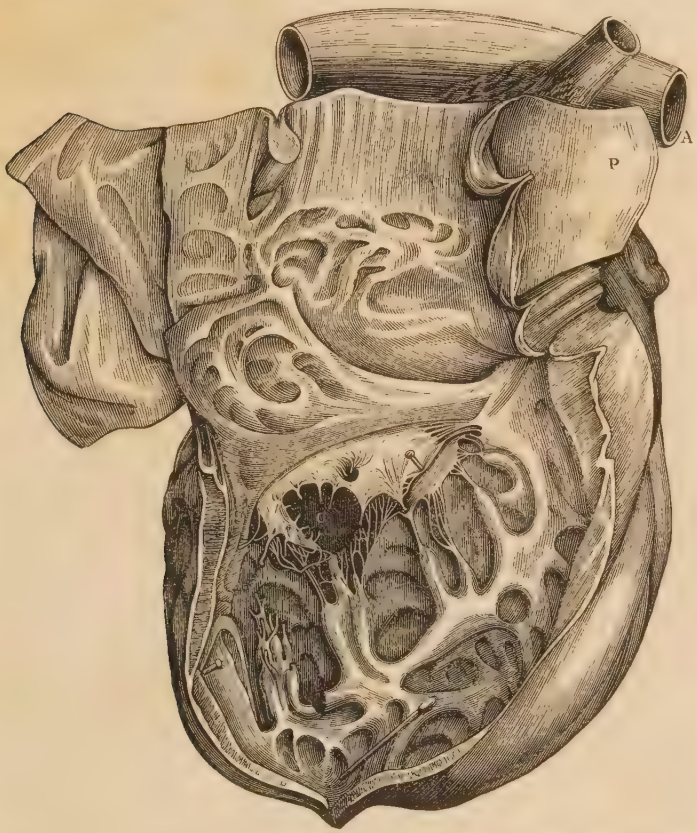
coming very laborious, he died early on the morning of the 14th, the sixth day after his admission into the hospital.

Post Mortem Examination.—The inspection of the body took place about twelve hours after death. The body was extremely œdematous; both pleuræ, and the peritonæum were full of fluid, effused, as regards that in the pleura, during the last forty-eight hours. The lungs did not collapse, they were in a highly œdematous state. The heart presented considerable hypertrophy, with dilatation of the right ventricle and auricle; the left cavities were rather larger than the normal size; the valves of the left side were perfectly healthy, as were also those of the pulmonary artery; not so, however, the tricuspid valve, the anterior and largest division of which, that which separates the infundibular from the auricular portion of the ventricle, lay loose in the cavity of the ventricle; it retained its connexion with the heart only at its base, towards the auriculo-ventricular fibrous zone, inasmuch as all the chordæ tendineæ belonging to it were torn across at unequal distances, so as to give the free margin of the valve a ragged appearance; the musculi papillares, from which the chordæ tendineæ originally sprung, and to which portions of them still adhered, were distinctly shrunk and wasted; the margin of the valve was not thickened, nor could any morbid change be detected in any part of its structure, nor in that of the broken tendinous chords: the ends of these cords, both of the portions adherent to the valve, and of those attached to the musculi papillares, were swollen into little knobs, as represented in the annexed wood-cut, calling to mind the swollen ends of the nerves of stumps after amputation.

The aorta and its branches were unusually small, and their coats much attenuated, so that they resembled in structure the pulmonary artery, which, on the other hand, partook of the dilatation and hypertrophy of the right cavities.

The atrophied condition of the musculi papillares in the right ventricle, which are the regulators of the tricuspid valve, furnishes interesting evidence of the long existence of the rup-

ture. Its date was probably to be referred to the time when the patient received the blow on his chest, a period of two



years and a half(*a*). And the rounded and swollen extremities of the tendons indicated an effort at repair, which wanted for

(*a*) *Description of the Engraving.*—The heart is represented with the right ventricle laid open by an incision carried along the right side of the septum cordis, through the pulmonary artery, and along the right edge of the heart. The flap, consisting of the anterior wall of the ventricle, is raised up, so as to expose completely the cavity of the ventricle and its carneæ columnæ; the outer and anterior musculi papillares are distinctly atrophied, and all the other forms of columnæ carneæ are hypertrophied. A, a portion of the aorta; P, the pulmonary artery; C, tricuspid orifice, with the broken and swollen extremities of the tendinous cords hanging into it.

its success only the complete and continued apposition of the broken extremities, which, in such an organ, would, of course, be impossible.

The mucous membrane of the stomach was extremely pale and thin, and here and there soft; there was no ulceration or cicatrix.

There was nothing worthy of special notice in any of the other organs.

This case presents several points worthy of notice.

1. *The Nature of the Lesion.*—This appears to have been purely the result of some violent and undue tension to which the tendinous cords were subjected. The valves and cords were, undoubtedly, perfectly healthy, and there could not have been any morbid process preceding the rupture, as there was no sign whatever of any alteration in their tissue. What was the condition which led to this rupture? It could have been only one of great distension of the valves, caused by an unduly prolonged repletion of the ventricle, which, again, could only have existed where obstacles had for a corresponding period opposed the escape of the blood from it. Now we know that in expiration, or during the suspension of the respiratory acts, whether the lungs be filled with air or not, the circulation through them is retarded, the blood accumulates in the right auricle and its veins, as is shewn by the turgid state of the superficial veins of the neck and head. Such an effect is very likely to be produced by a prolonged struggle, as in wrestling, or any strong resistance to the efforts of another. In the patient's history we find it stated that he was stabbed in the right side in a scuffle: the effort connected with this scuffle, and the fright induced by the stab, would, undoubtedly, induce a degree of disturbance of respiration sufficient to impede the circulation through the right side of the heart. There seems no other cause so likely to account for the extensive rupture of the tendinous cords which took place in this case, as the tension which such a continued effort would create.

2. *The Duration of the Lesion.*—There are no facts in the history of the case, besides those which lead to the inference made in the preceding paragraph, which enable us to determine the precise date at which the rupture took place, and, therefore, the precise duration of the lesion. All that can be said upon this point is, that, as the musculi papillares, from which the broken cords sprung, were shrunk and atrophied, there can be no doubt the duration must have been considerable. We have no means of judging of the length of time necessary to cause the degree of wasting which existed.

It may be remarked that this wasting, in connexion with the ruptured chordæ tendineæ, affords a valuable proof of the true functions of the musculi papillares, namely, to act upon the tendinous cords, and through them upon the valve. The tendons being broken, the muscles can no longer perform their office, and they consequently waste.

3. *The Symptoms produced by the Lesion.*—The great imperfection of the tricuspid valve, which a rupture of several of its tendinous cords would produce, would not immediately give rise to such serious symptoms on the right as on the left side. The necessity for a perfect auriculo-ventricular valve is much less on the right than on the left side, for the overflow into the auricle, in the former situation, would find a free exit into the large veins with which it communicates, whereas the blood regurgitated from the left auricle would find its way into the pulmonary veins and capillary plexuses, to the great impediment of the pulmonary circulation and of the respiratory function.

John Hunter regarded the valves of the right side as less perfect than those of the left, and the late Mr. Wilkinson King assigned to the tricuspid valve the office of a safety-valve to protect the lung, under undue distension of the ventricle, from retarded or impeded respiratory acts. If Mr. King's view were correct,—and I see no strong objection to it,—it might be supposed that in health a slight regurgitation takes place, during the systole of the right ventricle, at the tricuspid orifice. This

might increase without producing any immediate serious effect, but a great regurgitation could not last long without injury, for it would necessarily create an obstacle to the flow of blood from the right auricle, and dilatation and hypertrophy of that cavity would be produced; the retardation of the venous circulation in this way would give rise to impeded arterial circulation, and the left ventricle would thus be excited to increased exertion, and would gradually experience dilatation and hypertrophy; the impediment at the left side would soon react upon the pulmonary circulation, and give rise to dilatation and hypertrophy of the right ventricle.

The sequence of effects due to unnatural regurgitation through the tricuspid orifice would be, first, dilatation and hypertrophy of the right auricle; secondly, congestion of the systemic veins; thirdly, impeded flow into the arteries; fourthly, hypertrophy of the left ventricle and auricle; and lastly, impeded pulmonary circulation and consequent hypertrophy and dilatation of the right ventricle.

It admits of question whether the great amount of hypertrophy and dilatation which the right ventricle exhibited was due chiefly to this cause, namely, the impediment at the left side caused by venous congestion. If this were so we might justly expect to find a greater amount of hypertrophy and dilatation on the left than on the right side. Such was not the case in this instance; on the contrary, the report of the inspection states that the increase in the left cavity was trifling. Is there any cause, then, capable of inducing dilatation and hypertrophy of the right ventricle, which could come into operation early, and before the left cavities would have encountered any obstacle? I believe that such a cause did exist, in the dyspnœa induced by the disturbance in the circulation through the right side, and the consequent imperfect supply of blood to the lungs; the dyspnœa thus induced giving rise to more or less of obstruction to the pulmonary circulation: and the result of this, as far as regards the heart, would be hypertrophy and

dilatation of the right ventricle to an extent proportionate to the obstacle to be overcome.

The sequence of the symptoms developed by such a lesion as I have described, would undoubtedly, be: 1. dyspnœa; 2. venous congestion, regurgitation in the cervical and other veins; 3. the usual effect of great venous regurgitation,—dropsy, with congestion of viscera, especially of the liver.

This patient had a symptom which is not of very common occurrence in heart disease, and which, on a superficial view, would seem to have no connexion with the cardiac malady. The symptom to which I allude was *hæmatemesis*, for which the *post mortem* examination unfolded no cause in ulceration or other breach of the mucous surface. I cannot but think that this symptom was intimately connected with the peculiar lesion which occurred in this case. We have seen that the liver was greatly enlarged, and enormously congested; this congestion is easily explained by reference to the great regurgitation at the tricuspid orifice so near to the hepatic veins: and we know that hepatic congestion is extremely apt to give rise to gastric hæmorrhage.

If I shall again meet with a cardiac affection, accompanied with frequent attacks of hæmatemesis, I shall look out for a lesion giving rise to great regurgitation at the tricuspid orifice.

It is highly probable that, up to a certain point, these gastric hæmorrhages had a favourable influence in relieving the hepatic congestion, just as we often find that topical bleeding over the region of the liver gives great relief to the congestion of that organ.

I have searched through several of the best authors for an analogous case to this; but although cases exist of rupture of the tendinous cords of the right side, I have failed to discover one in which the rupture seemed to arise from violence, and was unattended by any previous morbid condition of the valves or of the cords themselves.

Art. II.—*Observations on the late Epidemic Fever.* By Joseph Lalor, M.D., Physician to the Union Fever Hospital and Workhouse, Kilkenny.

The prevailing epidemic in Kilkenny, for the last three years, presented such a general uniformity of character, that it must be considered as one and the same fever throughout. From the predominance of gastric and enteric symptoms, it might not inaptly be called gastric or gastro-enteric fever; and the very general accompaniment of an eruption of purple spots, in the cases which occurred during the last two years, places it in the class of maculated fevers.

Gastric fever became prevalent in this locality about the summer of 1844, and, at the same time, our well-known maculated typhus, which for many years previously had been so common that it might have been considered endemic, became comparatively rare, and has since continued so.

The invasion of this gastric fever was generally very sudden, and often severe; usually setting in with rigor, and sometimes delirium or confusion of intellect, followed immediately by nausea, vomiting, diarrhœa, thirst, anorexia, headach, and pain of back and joints. The aspect was at first sunken, the skin cold, and the pulse small, feeble, or irregular; but reaction speedily set in, and brought with it a quick, sharp pulse, hot skin, foul tongue, and disordered secretions. The thirst, nausea, and other gastric symptoms, were the most prominent and most persistent symptoms, being often very intense. Various unpleasant sensations, and tenderness on pressure were felt over the region of the stomach, and the tongue was very generally coated with a peculiar, thick, creamy fur. Disturbance of the intellect was rare, and I never observed typhoidal stupor in the first stage of gastric fever, before the summer of 1845. Up to this period, also, no form of cutaneous eruption occurred in gastric fever. After a continuance of the forego-

ing symptoms for a period varying from three to eight days, the fever went off usually very abruptly. The symptoms were comparatively mild, and death very rare in this, the first stage, which commonly ended in convalescence, but to be followed very generally, in from two days to a week, by relapse. This relapse, in a great number of instances, could not have been the result of any error in diet or otherwise, and occurred in spite of every precaution and the trial of various remedies for its prevention. It seems worthy of some consideration, whether a recurrence of fever, which was the ordinary course of the disease, should be considered as a relapse in the proper sense of the term, or whether it might not more correctly be looked on as a subsequent stage, or consecutive fever. In conformity with this view, the first convalescence should be considered as the stage of intermission. The analogy between intermittent fever and cholera, and many of the phenomena of gastric fever, strongly favour this presumption.

The second febrile attack, whether it be considered as a relapse or otherwise, assumed one of the four following forms:

1. Pyrexia, attended by severe general pains, and terminating favourably in a period varying from three days to a week, and not unfrequently in the same abrupt manner as the first stage. The pains were sometimes confined to the joints like rheumatism, sometimes they followed the course of the nerves like neuralgia, but they were very often referred to the muscles or skin, and compared to the sense of soreness left after a beating.

2. Pyrexia, with distressing nausea and vomiting, usually of a grass-green fluid, and often accompanied by extreme prostration, with sunken countenance, cold, clammy surface and extremities, and slow, small, irregular pulse. Notwithstanding a train of symptoms apparently portending such imminent danger, recovery followed in about the same period of time as in the preceding form of relapse.

3. A combination of the two preceding forms of fever.

4. The fourth form of relapse was a species of low protracted gastro-enteric fever, attended with nausea, thirst, irregular state of the bowels, great depression of spirits, variable pulse, white dyspeptic, or red beef-steak tongue, and general *malaise*. The termination was usually favourable, unless in the old or debilitated, to whom it was often fatal; and low typhoid symptoms, with profuse bronchitis, diarrhœa, or dysentery, usually preceded death: but no cutaneous eruption appeared.

In the summer of 1845 a purpuric eruption began to form a frequent accompaniment of gastric fever, which, however, retained the same general character as to other circumstances. This eruption came out at the crisis of the first fever, and a second crop at any subsequent period was very rare. The symptoms previous and subsequent to its appearance on the skin were similar to those of the gastric fever already described, and which pursued very nearly the same course, whether the cutaneous eruption appeared or not. The pulse was in general quicker and sharper at first, and subsequently more rapid, and more like a hæmorrhagic pulse, in the eruptive than in the non-eruptive form of gastric fever. The eruption was often preceded and foreboded by constrictive pain of the chest, with or without a bronchial mucous rale; very hurried and anxious respiration; weak, fluttering action of the heart; and vibratory thrilling of the carotids. Thick, creamy coating of the tongue, collapse, and sunken countenance, were common in the eruptive fever, the two latter at the invasion or crisis; but similar symptoms occurred sufficiently often when no eruption succeeded, and they have been absent or not distinctly marked so frequently in eruptive cases, that they afforded no certain foreknowledge as to whether the eruption would follow or not. After the summer of 1845 the invasion of fever became more sudden and severe, and its critical termination more abrupt and well marked.

A symptom so curious, and so full of interest, as the purpuric eruption, attracted my notice on its first appearance,

which I could not fail to observe, as I had always been in the habit of looking for the maculated eruption of typhus in fever cases. The occurrence of purple spots soon became so frequent, that I had notes of forty-two of the most remarkable cases, that occurred in my wards in the workhouse alone, before the month of September, 1846; and so early as the 1st of December, 1845, I stated, in reply to a circular addressed to me by the Commissioners appointed by Government, with reference to the apprehended scarcity from the failure of the potato crop, that the prevalence of purpura was a peculiar feature of disease at that time in this locality. There can be no doubt that, in Kilkenny at least, the commencement of this *gastro-purpuric* fever is to be referred to the summer of 1845.

In the spring of 1846, diarrhœa and dysentery prevailed extensively, either as idiopathic affections, or as complications or sequelæ of the reigning fever. In the month of October, 1846, my opportunities of observing fever became much extended, in consequence of the duty of providing for the treatment of extern fever cases, from all parts of the Kilkenny union, having been thrown on the Board of Guardians, owing to the reduction of the county and city fever hospitals from want of funds. It is from this latter date that gastro-purpuric fever has ravaged Kilkenny, in common with many other parts of Ireland, as an epidemic of perhaps unparalleled extent and severity; and, from the commencement of last spring, the eruption of purple spots has excited very general observation. Since last October, also, the purpuric eruption, relapses, and bowel complaints, have become more frequent, and of a much more dangerous character; and jaundice, putrid diarrhœa, general dropsy, and gangrene at the extremities of the mucous canals, have occurred, for the first time, in decided connexion with gastro-purpuric fever. The essential characters of the reigning fever have not, however, been radically changed; and, notwithstanding the addition of the foregoing and some other important complications, the fever on which they are engrafted

is still of the same gastric or gastro-enteric type as that which prevailed three years ago, and very many cases of which still occur unmixed with any eruption.

The amount of the purple eruption by which this fever was characterized, varied; the number of spots in some cases not being more than six, whilst in others they covered the body profusely. Whether the number of spots was few or many, an abatement of the febrile symptoms occurred on their appearance, in nearly every instance. The few exceptions were: when the fever was kept up by some complication, as pneumonia or diarrhœa; when the type of the fever was low, or extreme debility existed; when the first stage had been more than usually prostrative; and when the eruption was very copious, dark coloured, and complicated with large blotches. The appearance of such an eruption was sometimes immediately followed by collapse and death.

The order of frequency in which the skin of the different parts of the body was the seat of the eruption, was pretty much as follows: the upper part of the chest, the inguinal regions, the back of the neck and throat, the abdomen, the flexures of the elbow-joints, the arms, fore-arms, legs, thighs, lumbar region, and lower part of chest. The eruption rarely appeared on the forehead, eyelids, conjunctiva, or cheeks. I have sometimes seen distinct round spots on the conjunctiva, similar to those on the skin, but oftener an irregular ecchymosis or blood-stain. The spots were of different sizes, varying from the smallest dot, like that caused by the prick of a needle, to the usual size, about that of a split pea, or to blotches and patches of greater magnitude. I have seen the whole posterior surface of both thighs and legs, from the buttocks down to the heels, occupied by one continuous blood-stain. On the first appearance of the spots they were usually of a purplish colour, but occasionally they were bright red, and in some cases of the colour of venous blood. The first day after their eruption they generally began to fade, and

they had entirely disappeared, in many instances, in one, two, three, or four days: whilst a few hours sometimes sufficed for their evanescence, especially when a copious perspiration broke out. If the eruption was of a blackish colour, which generally foreboded great present danger, or consecutive fever of a low bad form, or putrid diarrhœa, the eruption continued little or not all changed for several days, if the patient lived; or it assumed a dark brown mahogany colour; or a fresh crop of spots or blotches broke out; but a second crop was a very rare occurrence.

When the eruption was fading away favourably, its colour often became so indistinct that it resembled the mottled form of typhoid maculæ. Whilst it was recent no such mistake could be made unless by a very inattentive observer; and at any period of the purpuric eruption, the persistence of the spots after pressure by the finger was sufficient to distinguish them from the spots of typhus. The central puncture of flea-bites is not always easy of recognition, and it was sometimes very difficult to distinguish these marks from that form of purpura in which the spots are small. But it generally happened that some at least of the purpuric spots were of a larger size than flea-bites ever attain, and even when only one spot of this size appeared it was sufficient for all the ordinary purposes of diagnosis. In cases where the purpuric eruption disappeared slowly, and low, putrid symptoms set in, the larger blotches, if present, gradually changed their colour to a streaked yellow, blue, and green discoloration, or portions of skin when pressed upon underwent similar changes of colour; the surface of the skin, when blistered or irritated by sinapisms, turpentine, &c., frequently became blood-stained, but sloughs rarely followed. I have seldom witnessed such an ecchymosis of the skin as occurs after a blow. Large blobs, and smaller bullæ, full of bloody or greenish serum, sometimes appeared, and in one case a single enormous blob full of reddish serum separated the cuticle from the wrist to the elbow of the right fore-arm, and

was still progressing when death stopped its course. The smaller bullæ, on breaking, sometimes exposed a deep excavated ulcer.

In relapses, patches of urticaria sometimes occurred, and the accompanying fever was usually marked by great sensorial disturbance, very rapid and shabby pulse, and brown, dry tongue; and the rash itself, being less bright in colour, less elevated, and in smaller patches than usually occur in urticaria, closely resembled the measly form of typhoid maculæ. A case with such a combination of symptoms might readily be mistaken for one of eleven or fourteen day typhus, until the subsidence of all febrile symptoms, in twenty-four or forty-eight hours, would correct the error. A close examination of the eruption was necessary in such cases, to prevent mistakes, especially in hospital, where typhus fever so frequently occurred during convalescence. The detection of the little white characteristic spots of nettle-rash removed all doubt.

Another remarkable feature in the fever of last winter was the frequent occurrence of gangrene at the extremities of the mucous canals. Thus we met with cancrum oris in adults as well as children, gangrene of the upper lip, of the anus, and of the pudendum. This peculiarity concurs with all the other symptoms in exhibiting the special tendency of this fever to affect the muco-cutaneous system; and the cases of sphacelus which occurred cannot be supposed to have arisen from a general gangrenous tendency, as bed-sores were exceedingly rare, and in no instance have I seen gangrene of the toes or fingers.

The treatment of this, as of most other fevers, seemed best conducted on the expectant system, meeting symptoms as they arose. I cannot recommend any remedy as specific; and, considering the almost invariable tendency to recovery from the first febrile attack, we might almost rest satisfied with palliative treatment. But, bearing in mind the great proneness to relapse, and to consecutive bowel and pulmonary attacks, often

of a most dangerous character, more active treatment was generally demanded.

At the commencement, a gentle purgative, repeated if necessary, was found useful when the invasion of the disease was followed by excitement, as was generally the case. When severe syncope, or collapse, ushered in the febrile attack, and reaction did not take place on the application of external warmth and the use of hot drinks, stimulants were sometimes required at the very onset of the disease, to be withdrawn, however, when reaction occurred. As the most salutary stimulant at all periods, and one without which all other remedies often failed, I cannot rank too highly a pure and thoroughly ventilated atmosphere.

Towards the close of the first stage, the repetition of stimulants was often indicated by the symptoms of debility and prostration which presented themselves. But I do not think that the use of stimulants was so generally or so continuously called for, or to such an extent, as in ordinary typhus fever.

Diluent drinks, and the abstraction of solid food, and of all external or internal irritants, formed the chief part of the general treatment. I have seen no benefit from diaphoretic medicines; and certainly none of a depressing nature should be used, as great and alarming collapse has sometimes followed the employment of even very small doses of tartar emetic. Inflammatory complications were most safely and successfully treated by mercury, with opium and blisters; and the apparent analogy between this disease and scurvy should not deter us, in such complications, from the use of this medicine, which acted as favourably here as in idiopathic inflammations.

The intense præcordial pain, which was present in many cases, was best relieved by sinapisms and blisters, as their application did not depress the constitutional powers; and I have sometimes seen very great depression produced by even a few leeches. The period of convalescence required even more caution, as to diet, than the convalescence from typhus

fever; and meat and broth affected the bowels injuriously, even when given in the most moderate quantities. The digestive organs of the poor, enfeebled by the prolonged want of nutritious, or even sufficient food, seemed unable to bear any of the stronger articles of diet, until gradually accustomed to their use.

In relapses the same general rules were observed as in the first stage of the fever; but stimulants were more generally called for, and had to be increased or diminished according to circumstances, of which age, constitution, and previous alimentation, were amongst the chief. In a very large proportion of the half-famished and broken-down individuals who crowded our hospitals, the liberal and long-continued use of stimulants and nutritious food seemed alone capable of saving life, which, nevertheless, they often failed to do.

The irritability of stomach, and especially the green vomit so prevalent, often baffled treatment from the first. The best and safest general remedy, at all periods of this affection, was the application of external stimulants, as sinapisms or blisters over the stomach. After the first twenty-four hours, internal remedies had a fairer chance; and of these, effervescing draughts, opium, and creasote, were the best. Stimulating emetics sometimes produced a good effect very rapidly, in cases where extreme collapse was produced by constant small vomitings, or nausea. The principal emetic I used was mustard; and in the above cases reaction often speedily followed, and the nausea or vomiting was quieted after the action of the emetic. Emetics should be avoided when drowsiness or any decided symptoms of head engagement exist. Mustard emetics had an extraordinarily good effect in cases which were admitted in a state of great collapse, with copious bronchial effusion; and emetics of ipecacuanha were very serviceable in many cases of jaundice, when the constitutional powers were not sunk so low to forbid their use. The severe pains which were present in the stage of relapse were generally removed by opiates, and especially by Dover's Powder. The delirium of the advanced

stage was best treated by blisters to the nape of the neck, and the application of cold to the head when much heat of the scalp prevailed. A form of nervous delirium, analogous to delirium tremens, with quick, small pulse, moist skin, and tolerably clean tongue, and which demands the use of opiates, stimulants, and blisters, sometimes occurred in this fever, but was more frequently met with in typhus. After a trial of a great variety of remedies, I have found none so generally useful in all forms of diarrhœa as opium by the mouth and by injection. The milder cases it rapidly checked, and many severe cases after a longer employment of it. Many individuals, apparently in a hopeless state, were so far benefited by the mitigation of the exhausting discharges from the continued use of opium, that they were enabled, with the help of a naturally vigorous constitution, to fight through a desperate struggle to final recovery. The liberal administration of stimulants was in general required when the discharges from the bowels were profuse or protracted. The peculiar anasarca consecutive on septic diarrhœa was sometimes removed by the use of the tincture of the muriate of iron and generous diet. When the diarrhœa persisted with the anasarca, opium was also given.

Mortality.—The number of deaths in the first stage was small, and a large majority of the cases of relapse, even when complicated with bowel complaints, recovered, except when putrid diarrhœa set in, in which case the recoveries were very few, and of these some subsequently died from consecutive ascites and anasarca. I do not give any tables of the mortality, from a conviction that such must be very imperfect, and lead to very erroneous conclusions. So many cases left hospital well of fever, but to be subsequently attacked at their own homes, or in the chronic wards of the workhouse, with bowel complaints, anasarca, ascites, or phthisis, that our registry of the results of fever cases presents very uncertain data on which to calculate the actual mortality from this epidemic. On the other hand, many cases, admitted for the first time to our fever wards as cases of fever, were really of such a nature as not to admit

of any correct classification: they were often persons totally broken in constitution by long-continued privation and hardship, and in the last stage of emaciation and exhaustion, but labouring under no definite disease; sometimes they were subjects in some stage of diarrhœa, ascites, anasarca, or phthisis, attended, perhaps, with febrile symptoms. I am satisfied that the general conclusions I have given as to the mortality are correct, though wanting that show of accuracy which statistical details impart.

Post Mortem Appearances.—The most general and important group of *post mortem* appearances was exhibited by the sanguineous effusions that presented themselves beneath the surface, or in the substance of the various organs and tissues of the body. Spots and blotches similar to those on the skin were met with on every portion of the peritonæal surface, including the folds of the mesentery, on the pleura,—both costal and pulmonary,—on the mucous membrane of the stomach, the large and small intestines, the bladder, and on the surface of the liver, kidneys, and spleen. I met with spots on the arachnoid only once. They were seated under the covering of the optic thalamus, in the left lateral ventricle, and were perfectly definite in character, but only two in number. Effusions of blood were frequently found in the substance of the lungs, forming apoplectic masses, and once in the substance of the muscles.

Purpura on the internal surfaces varied in the size, shape, number, and colour of the spots, as it did on the skin. Their form was generally circular, and their size usually varied from that of a pin's point to a split pea; but irregularly-shaped blotches, two, three, or four inches in measurement, sometimes presented themselves. On the pleura, the serous surfaces of the large and small intestines, stomach, and kidneys, middle-sized and large spots were frequently mixed, but the largest blotches were met with under the loose reflections of the peritonæum, forming there true ecchymoses, and the smaller eruption occurred on the mucous membrane of the small intestines and stomach. The mucous membrane of the bladder shewed also rather small

spots. The quantity of the internal eruption varied much, but was generally more copious the greater had been the number of spots on the skin.

When death occurred whilst the cutaneous eruption was still recent, the internal spots were equally or even more vivid in colour, and, in some instances, the latter were still visible, and well-marked, although the former had disappeared before death, or, as occasionally happened, after decease. Spots and blotches on the mucous surface of the stomach were rare, and usually of a bright red colour. The pleura and the serous and mucous surfaces of the large intestines presented the eruption most frequently and in greatest quantity. Effusions of pus, lymph, and colourless or bloody serum, into the cavities of the pleuræ, were met with in connexion with purpuric eruption in the same parts. Serous and sero-sanguineous effusions occurred in the cavity of the peritonæum, under similar circumstances, but effusions of pus or lymph were never met with.

On the serous surfaces the spots never proceeded to ulceration, but on the mucous membranes, especially of the large intestines, the spots and blotches frequently ran into ulcers. Those which I have met in the stomach were usually very small, circular, set in clusters, and apparently the result of small purpuric spots about the size of pins' heads and thickly set. Ulcerations, larger in size, more irregular in shape, and more superficial, like abrasions of the mucous membrane, also presented themselves in the stomach. Both these forms of ulceration presented clean, healthy, granulating, and suppurating surfaces, and were found also in the large and small intestines, intermixed with the gangrenous, scorbutic, and fungoid ulcers next to be described, and belonging to the putrid form of diarrhœa. The latter, though having a common origin, presented a variety of appearances, depending in part on the size of the spots and their coalescence or isolation; and the purpuric spots, in which the ulcers originated, were very unequally affected, apparently from the above causes; so that the gradual

progress of ulceration, through all its different stages, could be accurately observed in a single case. The smaller spots still preserved an unbroken surface, and their original purple colour, only slightly dulled in hue. Other spots, in great number, were of a larger size than ordinary, of an uniform vivid blue colour, oval or circular, unbroken and even on the surface. In some, a small, white, elevated pustule stood in the centre, and the seat of this pustule was found occupied in other spots, farther advanced, by a depressed ulcer. In a further stage of development this central ulcer was surrounded by a whitish, concentric ring of sloughy membrane, loose and detached from the cellular tissue underneath, and a blue margin encircled this sloughy membrane.

With the gradual progress of the disease the ulcers sometimes extended beyond the original size of the purpuric spots, or various contiguous ulcers ran together, forming clean, granulating surfaces, but sometimes covered with sloughy cellular membranes and having no trace of the original blue colour remaining in either case. More frequently a narrow purple edge, or blue streaks, still marked the origin of the ulcers from the purpuric spots. Those blue gangrenous ulcers were at other times found degenerated wholly, or in part, into irregularly-shaped, exuberant masses of fungoid, flabby, mamillated granulations, sometimes encircling the whole caliber of the intestines in a continuous series, and arranged in elevated ridges above the level and near the margin of the blue ulcers, which they partially or entirely bounded. Their colour was red, or flesh colour, sometimes greenish, and they resembled the spongy granulations of scorbutic gums, and, like them, were easily scraped away with a knife. The surface exposed by their removal was perforated by innumerable small holes (as if worm-eaten), between which, smooth narrow bands intervened, the whole floor forming a finely reticulated net-work. No appearance of mucous membrane could, in general, be observed, and the cribriform floor of the granulations seemed formed of the remains of the muscular and cellular coats; but here and there

a patch of mucous membrane, studded, perhaps, with purpuric spots, was found still intact, though hidden amongst the granulations, which, springing by a narrow pedicle from the plane on which they rested, expanded like fungi, and overlapped the adjoining surfaces. The orifices of the mucous crypts or follicles were, in some instances, seated in the centre of the blue spots and ulcers, and were pointed out by a glairy mucus which flowed from them, or exuded on pressure.

Protuberant ulcers, of very irregular shape and various sizes (some four inches in one measurement), lined the whole or a large portion of the caliber of the intestines in other cases. The edges of these ulcers were raised and everted; their surface, rough and uneven, was covered with shreds of sloughy cellular membrane, of a mixed brown, blue, and yellowish colour. The caliber of the intestines was greatly encroached on by the projection of these ulcers, and the outer walls of the gut were thickened over their site.

In another form of ulceration the valvulæ conniventes of the small intestines were thickened, wrinkled, obtuse on their edges, and firm to the feel, and, with the intervening portions of intestine, were uniformly coated with a thick, scaly, or granular layer of a brown or yellow colour, as if covered with a coarse coat of varnish. This layer appeared to be an exudation from innumerable small ulcers, perforating the mucous membrane down to the vascular and muscular coats. The intact mucous membrane between the ulcers formed bands and striæ, which were dotted with minute purpuric spots of a bright colour, and so closely set as to give the appearance of an uniform redness until examined with a lens. The small intestines frequently presented contractions and intus-susceptions in young persons, and gelatinous softening of the mucous membrane of the stomach and small intestines was common at all ages. Perforations of the stomach or intestines were in no instance discovered.

The liver was always found of a normal size, often pale on the surface, but sometimes variously mottled, green, brown, red,

or yellow. At the protracted period after death (always forty-eight hours at least) when I made my *post mortem* examinations, and from the generally fluid state of the blood, this mottling was probably owing to imbibition. The substance of the liver was, in general, soft and friable. In one case of ascites, drops of curdy pus exuded from the biliary ducts of a small portion of the thin edge of the liver, and from the substance of the spleen generally. The gall-bladder frequently contained vitiated bile of different colours and degrees of consistence, very abundant, thin, and yellowish in most cases of jaundice; in cases not jaundiced it was often found scanty, thick, viscid, ropy, green, black, brown, or tarry. In one case, not jaundiced, the bile presented a greenish-black colour, and the blood of the vena cava was nearly similar in appearance. The bile, on being mixed with water, was often found exactly resembling the fluid ejected from the stomach in green vomit. In cases of jaundice all the tissues and fluids of the body were found stained yellow, after death, corresponding with similar colouring of the secretions during life, as the urine, the sputa in pneumonia and bronchitis, and the fur on the tongue. The ducts from the liver to the gall-bladder, and thence to the intestine, were always pervious.

The spleen was generally of a normal size, and firm to the feel, but was sometimes enlarged, pulpy, soft, and filled with grumous blood. The kidneys were generally normal, but were sometimes congested with venous blood, and presented purpuric spots or blotches on the surface.

The lungs were often found congested over a greater or less extent; and apopletic effusions into their substance, from the size of a nut to an apple, were frequently observed. Œdema of the lungs, and passive and active congestions of the bronchial tubes, with serous or purulent exudation, were not infrequent. Serous effusion into the pericardium was very rare, and small in quantity, and purpuric spots were never met with on this membrane. The substance of the heart was sometimes slightly softened. In a large majority of

the *post mortem* examinations the blood was found black, thin, and fluid, or forming only grumous clots; even the left ventricle generally contained such blood, and it flowed freely from all the organs of the body when they were cut into, whether they were normal in structure or congested. In chronic cases, where a protracted illness preceded death, the tissues were generally pale, and the quantity of the blood was evidently diminished.

The brain was, in general, healthy, except in jaundiced cases, when the cerebral substance and the membranes were universally stained with bile. Slight serous sub-arachnoid effusion sometimes presented; and extensive lymphy and purulent deposit coated the arachnoid, in a case in which opisthotonos and other marked symptoms of nervous lesion occurred before death.

Causation.—From the frequent concurrence of famine and fever it is reasonable to conclude that a close connexion exists between the two, and it would seem to be believed by many, that the purple spots and fatal diarrhœa of our present epidemic are specific results of famine. This at least appears to be the meaning of such names as *the Famine Fever*, and *the Famine Diarrhœa*,—terms in pretty general use. I think it would be better to avoid terms expressive of a conclusion more precise and positive than the data we possess warrant. For my own part, whilst I admit the general connexion between famine and fever, I shall not undertake to say that famine alone is the immediate or specific cause of any form of fever, and I shall content myself with the enumeration of some of the principal facts bearing on this difficult question of causation as presented in Kilkenny and its neighbourhood.

1. Gastric fever prevailed before the failure of the potato crop in 1845.

2. The purpuric eruption became prevalent about the time of this failure, but previously to the occurrence of famine.

3. This eruption did not appear with a new fever of its own, but as an addition to the previously reigning fever; and

it was a frequent accompaniment of small-pox as well as of gastric fever.

4. Purple spots have not appeared in measles, and scarcely more frequently than usual (if at all so) in maculated typhus.

5. Other diseases have not been complicated with this eruption, even in delicate and ill-fed subjects.

6. With the setting in of the general and aggravated famine in last autumn, gastro-purpuric fever became considerably more prevalent and fatal, the eruption assumed a worse character and greater frequency, dangerous symptoms and complications previously observed grew more common, and new ones set in, amongst which was putrid diarrhœa.

7. *Post mortem* examinations have shewn that putrid diarrhœa arose from profuse purpura of the intestines running into a peculiar form of gangrenous ulceration, and that less malignant forms of diarrhœa were often concurrent with a more sthenic and scantier purpuric eruption of the intestines not running into gangrene.

8. Gastro-purpuric fever was at its height, both as to malignancy and frequency, during the prevalence of cold and moist weather; and an increase of mortality and fever was invariably observed on the change of weather from dry and warm to moist and cold, and *vice versâ*. In connexion with this point the severity of last winter must not be forgotten.

9. Gastro-purpuric fever and diarrhœa were most frequent, and of the worst forms, amongst the ill-fed, ill-housed, ill-clothed,—amongst the most uncleanly, and those of weakest constitution, as females and persons near the two extremes of age, and amongst those exposed to an over-crowded and vitiated atmosphere. Bad forms of gastro-purpuric fever and of diarrhœa were rare in the opposite classes.

10. Nevertheless, gastro-purpuric fever, and less severe forms of diarrhœa than the putrid, have attacked many who were apparently placed in conditions the most opposed to their development; but such persons had been previously much exposed to the contagion of gastro-purpuric fever.

11. The eruption, diarrhœa, or other symptoms, have never assumed their malignant form in such cases, unless when the patients were exposed to a foul atmosphere, as in the overcrowded wards of an hospital; but such exposure has occasionally developed the worst symptoms, even in the most robust individuals. From the observation of certain cases, I think there is at least a strong presumption, that foul air alone is capable of developing gastro-purpuric fever.

12. Cases of death have occurred from, and I have myself seen many suffering apparently owing to, the unmixed effects of famine; and in those cases the phenomena of gastro-purpuric fever did not present themselves.

13. However gastro-purpuric fever may have originated, the facts that have come under my notice have convinced me that it has been communicated and extended by contagion. To detail all these facts would extend my observations to an unnecessary length.

14. Gastro-purpuric fever appeared as an epidemic for the first time shortly after the establishment of meal stores in districts previously pretty healthy.

15. Notwithstanding the exposure of many of the wealthier classes, as poor-law guardians, members of relief committees, &c., to the contagion of gastro-purpuric fever, it has not in general been developed amongst them; but such of them as have been attacked with fever have usually exhibited the fourteen-day maculated typhus.

16. Persons placed in somewhat the same condition as the wealthier classes, except as to the habitual use of meat diet, have usually, when attacked, exhibited the gastro-purpuric, and not the typhoid form of fever. This class includes artisans and tradesmen in good employment.

17. From the two preceding observations it would appear, that the habitual use of animal diet has been more or less preventive of gastro-purpuric, but not of typhus fever.

If we review the consequences of the late famine, we will

find that famine reduced the physical and moral energies of our people to the lowest standard, engendering unwonted habits of filth and vagrancy, which scattered in all directions the seeds of disease; whilst the measures adopted for the alleviation of famine congregated the people (in the open air, in a most inclement season) in large masses. I do not impute the slightest blame in any quarter for the system of relief adopted, knowing full well that a system free from some evil could not be possibly devised to meet so extensive a famine.

Famine also drove crowds of half-famished people into our large and more wealthy towns and cities, where the means of procuring food were more abundant, and the wretched and over-crowded lodging-houses, in which this class of persons found shelter, became the foci of contagion, and of the worst forms of fever. The foulness of the atmosphere was augmented by the accumulation of filth and heaps of manure and human ordure in our lanes and alleys, to an enormous and most pernicious extent; partly owing to the prevalence of bowel complaints; partly to the dearness and dearth of food, which absorbed all the time and means of our people in providing for present subsistence; and partly to the inability or unwillingness of the farmers to expend money in purchasing this manure for the cultivation of a crop so precarious as potatoes. It was in the neighbourhood of such lanes and alleys too that fever prevailed chiefly and most fatally amongst the wealthier classes(*a*).

(*a*) This valuable paper was forwarded to us in September last, together with fifty illustrative drawings, highly characteristic of the appearances described in the text; we regret exceedingly that we are not able, at present, to introduce these illustrations, but, except a great number were lithographed, and all highly coloured, they would be incomplete as a whole. We have also been obliged, from want of space, to omit parts of Dr. Lalor's communication, which entered at considerable length into the minute detail of the symptoms, complications, and other particulars attending the Kilkenny epidemic. We hope the author will continue his researches.—Ed.

Art. III.—*A Narrative of the last Illness and Death of Oliver Goldsmith, M. D.* By W. White Cooper, F. R. C. S. E., Surgeon to the North London Eye Infirmary.

Among the many remarkable men to whom Ireland has given birth, Oliver Goldsmith occupies a conspicuous position. His chequered career, his varied talents, the simplicity of his character, the kindness of his heart, his very failings, and his early death, all serve "to point a moral, or adorn a tale."

Some difference of opinion has existed as to the exact place of his nativity; but it is generally believed that he was born at Pallas, in the parish of Torney, County Longford, on the 10th of November, 1728(*a*). His father was the Reverend

(*a*) Such, at least, is the generally received opinion, and the entry in the family Bible, which still exists, would appear to confirm it; but another locality has been assigned as the birth-place of Goldsmith by several of his relatives and most of his early biographers. The late Robert Jones Lloyd, Esq., has often shewn us the room in which the poet was born, at Ardnagowan (now Smith Hill), near Elphin, and it is certain that he spent many years of his boyhood at this place. Mr. Lloyd has also printed a letter to this effect in one of the early editions of Goldsmith's poems; and this letter, together with one by the late Dr. Strean, was republished in the Rev. Edward Mangin's "Essay on Light Reading." Goldsmith's grandfather was curate of Elphin, and master of the diocesan school of that place, where the poet received the first rudiments of his education. "At present," says Mr. Prior, the apartment at Smith Hill to which we allude, "forms the dairy, though at that time one of the principal in a house second only to that of the bishop of the diocese, and since considerably enlarged; and the confinement of Mrs. Goldsmith is stated to have occurred unexpectedly during a visit to her mother."

About two miles from Elphin, at Ballyoughter or Creamstown, the residence and patrimonial estate of the Goldsmith family, is said to be the scene of the "Deserted Village." It possesses all the scenery described in the poem, even more perfectly than Lissoy or Auburn. We remember, when a boy, seeing the stump of the hawthorn tree, believed to be that mentioned by Goldsmith, in this spot. Several years ago this stump was taken up and made into snuff-boxes by the gentry of the neighbourhood.

It has always appeared to us that the poet, remembering this scene of his

Charles Goldsmith, and Oliver was the fifth of seven children. He received the rudiments of education first at Elphin, and afterwards at Athlone and Edgeworthstown. In June, 1744, he entered Trinity College, Dublin, as a sizar. His career there was not satisfactory, but this may, in part, be attributed to his falling under the dominion of a very harsh tutor. He was, in succession, intended for mercantile pursuits, for the Church, for the law, and for medicine, and in 1752 he commenced the study of the latter profession in Edinburgh. At the expiration of two years he proceeded to Leyden, where he remained about twelve months, studying chemistry under Gaubius, and anatomy under Albinus, but, it is to be feared, indulging freely in dissipation.

From Leyden he made a tour through Flanders, part of France and Germany, Switzerland, and the north of Italy, on foot, trusting to his wits and his flute(*a*) for support. In the autumn of 1756 he returned to England, and then became, first, usher in Dr. Milner's academy at Peckham, and afterwards assistant to an apothecary.

By the liberality of an old schoolfellow he was relieved from this position, and commenced practice as a physician. In 1758 he obtained the appointment of physician to one of the factories in India; but, being rejected at his examination before the College of Surgeons, he was unable to avail himself of it. From that time until his death he devoted himself entirely to literature.

Goldsmith's improvidence is known to have embittered his existence by the embarrassments it brought upon him; and

boyhood, had the locality in his remembrance when he described the "loveliest village of the plain," for the term Auburn did not, at the time of Goldsmith's residence in Ireland, belong to any of the localities assigned as the scene of the Deserted Village. While, however, the scenery is, probably, taken from his remembrance of Ballyoughter, the manners depicted in the poem are decidedly English.—Ed.

(*a*) Sir Walter Scott, in his biographical memoir of Goldsmith, has made the singular mistake of stating that it was on the *violin* that he performed during this tour.

although the stimulus of necessity doubtless exercised its influence upon his pen, and thus was the means of giving to the world many of those productions which otherwise would never have seen light, yet it produced a most injurious effect upon his sensitive mind, and by the depressing influence it exercised upon his spirits, contributed to hasten the catastrophe which, at the early age of 45, brought him to the grave.

During 1773 and the two preceding years, much of his time was passed at a farm-house about six miles from London, on the Edgeware Road, and close to the village of Hyde. Here he wrote his celebrated comedy, "She Stoops to Conquer," his "History of Greece," and his "History of the Earth and Animated Nature." The quietude and retirement he here enjoyed soothed his mind, and were congenial to his habits of study. Nothing could exceed the simplicity of his arrangements: he occupied but one apartment, which served as bed-room and study, and in which he usually took his meals. So pleased was he with this mode of life that he for some time contemplated fixing his permanent residence in the country; he had become tired of the bustle and excitement of a town life, whilst his pecuniary embarrassments rendered necessary a greater degree of economy than he was able to practise in London. When with his intimate friends, this scheme was a favourite topic of conversation; and he had even, it is said, sold his right to his chambers in Brick-court, Temple, about three weeks before his death, in anticipation of taking up his abode at Hyde. These prospects, however, from which he promised himself so much happiness, were not permitted to be realized.

In the year 1773 he entered with enthusiasm upon a project from which he expected to reap great advantages. It was the publication of a Dictionary of Arts and Sciences, in the preparation of which he was promised the assistance and support of Johnson, Burke, Sir Joshua Reynolds, Garrick, Dr. Burney, and others of high reputation. Unfortunately, the scheme was not received favourably by the public, and Gold-

smith was obliged, greatly to his mortification, to lay it aside. About the same time his hopes received another blow: certain of his friends had applied to Government for some provision for him, but met with a refusal. Such disappointments, combined with other vexations, and the pressure of pecuniary difficulties, weighed heavily upon him: his mind became seriously uneasy, his spirits low, and his temper irritable. These changes, together with a marked alteration in his appearance, were observed by his friends; but as he did not think proper to communicate to them his anxieties, they were at a loss to what cause to attribute the difference in his temper and his looks. Whatever vexations of mind he might have felt, the following list of works upon which he was labouring at the end of 1773 and the beginning of 1774, shews that he did not permit his energies to be relaxed. He had in hand at the time mentioned, the "Grecian History," the "History of the Earth and Animated Nature," and "A History of England for the Use of Schools;" he was revising the "Inquiry into Polite Learning," writing his poem of "Retaliation," translating the comic romance of Scarron, and arranging papers for a Survey of Experimental Philosophy. This accumulated load of literary work pressing upon a frame already weakened by sickness, and on a mind ill at ease, was greater than could be borne. He had retired to Hyde in the month of March, 1774, to pursue his labours, but was speedily attacked with dysuria (to which he was subject), with an unusual feeling of general indisposition. Upon this he returned to town. By quiet, and proper treatment the distress in micturition passed away, but symptoms of low nervous fever remained.

Goldsmith's usual medical attendant was Mr. Hawes(*a*). This gentleman seems to have been highly esteemed by the

(*a*) William Hawes was born at Islington, November 28, 1736. He received his education at St. Paul's school, and adopted the medical profession, practising in the Strand as an apothecary until 1780, when he obtained the degree of M. D. He died at Islington, December 5, 1808. He was a man

poet, and also by Edmund Burke and Sir J. Reynolds, as was evinced by their intrusting him with the management of the affairs of their mutual friend after his decease. Circumstances arose during the illness of Goldsmith, which, although they shewed the good sense and judgment of Mr. Hawes, temporarily weakened the regard and confidence of his patient, and caused much obloquy to be thrown upon Mr. Hawes after the death of the poet. The Morning Chronicle of the 12th of April, 1774, contains the following paragraph: "A correspondent assures us that many friends of the late Dr. Goldsmith are very desirous that the apothecary who attended him would favour the public with the particulars of his illness, so that they may be enabled to judge whether James's Powder was administered, and the good or bad effects produced from it. Such an account no reasonable man can object to, unless he is too late convinced that he did not act judiciously or properly to his patient."

In compliance with this request, Mr. Hawes published a narrative of the circumstances as they occurred, which, although impugned by interested parties, certainly bears the impress of truth. It is dated April 25, 1774, and is dedicated to Sir Joshua Reynolds and Edmund Burke. In the Preface the author thus states his reasons for its publication:

"After the Doctor's decease you were pleased to honour me with the management of his affairs, till the person should appear who was authorized to administer to his effects; and I flatter myself that I have faithfully executed your intention. But as the Public are interested in the loss of a man so conspicuous for his talents and his humanity as the late Dr. Goldsmith, they become naturally anxious to know the circumstances of his illness and death. This has induced many gentlemen who knew that I had attended him, to apply to me

of much benevolence of character, and was mainly instrumental in the foundation of the Royal Humane Society. There is a silhouette of Dr. Hawes in Lettsom's Hints on Beneficence.

for information on the subject; I have accordingly related to them the particulars which came within my knowledge: but having been also applied to in the newspapers, as well as by private letter, I have thought it best to publish this little pamphlet; and the rather as I have reason to believe some persons have formed very unjust and uncandid notions respecting my conduct in this affair."

The following is the narrative of Mr. Hawes:

"On Friday, the 25th of March, at 11 o'clock at night, the late Dr. Goldsmith sent for me to his chambers. He complained of violent pain extending all over the forepart of his head; his tongue was moist; he had no cold shiverings, or pain in any other part, and his pulse beat about ninety strokes in a minute. He then told me he had taken two ounces of ipecacuanha wine as a vomit, and that it was his intention to take Dr. James's Fever Powders(*a*). I replied that, in my opinion, this was a medicine very improper at that time, and begged he would not think of it. But I am sorry to say that every argument used seemed to render him more determined in his own opinion; which gave me much concern, as I could not avoid thinking that the man whom I had all the reason in the world to esteem was about to take a step which might prove extremely injurious to him. I therefore endeavoured to reason medically with him, and observed that his complaint appeared to be more a nervous affection than a febrile disease. . . . . However, though I reasoned with him on the subject for near half an hour by his bed-side, and vehemently entreated him not to take Dr. James's Powders, yet I could not prevail upon him to say he would not. At last I addressed him, to the best of my remembrance in the following manner: 'Please, Sir, to observe, that if you do take the fever powder, it is entirely without my approbation; and, at the same time, remember

(*a*) Goldsmith had derived great benefit from the administration of James's Powders, in an illness from which he suffered in September, 1772; but they were then prescribed by Dr. James himself.

how very anxious I have been to persuade you to desist from it; and now I will take my leave, if you will be kind enough to grant me one request.' He very warmly asked me what that was? I told him that, as he had always consulted Dr Fordyce(*a*) in preceding illnesses, and had expressed the greatest opinion of his abilities as a physician, I hoped he would permit me to send for him. It was full a quarter of an hour before I could obtain his consent to this, as the taking Dr. James's Powders appeared to be the only object which employed his attention; and even then he endeavoured to throw an obstacle in my way, by saying that Dr. Fordyce was gone to spend the evening in Gerrard-street, 'where,' added he, 'I should also have been, if I had not been indisposed.'"

After some further difficulty, Mr. Hawes obtained the desired consent; and on going home, instantly dispatched a note to Dr. Fordyce, who sent word that he would wait on Dr. Goldsmith immediately. Mr. Hawes was not present at the interview, but early the next morning Dr. Fordyce called upon him, and informed him that he had represented to Dr. Goldsmith, the preceding night, the impropriety there would be in his taking Dr. James's Powders, but that, instead of paying any attention to his remonstrances on this subject, he had persisted in his own resolution, and taken two or three doses of the powder, though it operated both as a purgative and emetic. Mr. Hawes continues: "When I called to see him on Saturday morning (the 26th of March), Dr. Goldsmith's servant told me he believed his master was dozing, as he lay very quiet. I then said I would call in the evening; which I

(*a*) George Fordyce was born near Aberdeen, in 1736. He took the degree of M. D. at Edinburgh, 1758, after which he spent a winter at Leyden. He then settled in London, and obtained great reputation as a lecturer on chemistry, materia medica, and the practice of physic. He was elected physician to St. Thomas's Hospital in 1770, was a fellow of the Royal Society, and a member of the famous Johnsonian "Literary Club." He died May 25, 1802.

accordingly did, and his man, with great appearance of concern, when I asked him how his master was, replied, he was very bad, for he had been vomiting all day, and had had a great many loose stools; notwithstanding which, the servant observed, the Doctor would make him give him James's Fever Powders; so that he still continued the use of the medicine, and of consequence it increased in its pernicious operation, by which means the evacuations were continued for at least eighteen hours. I afterwards went into Dr. Goldsmith's chamber, and found him extremely reduced, and his pulse was now become very quick and small; when I inquired of him how he did, he sighed deeply, and in a very low voice said, 'he wished he had taken my friendly advice last night,' meaning Friday night, the 25th of March; and this was all he said during this visit, for whatever other questions I thought proper to ask him, he appeared so much exhausted as not to be able to make any reply to them; and I clearly perceived he was so very weak and low from the large and copious evacuation, that he seemed to have neither strength nor spirit to speak.

"As Dr. Fordyce had visited him a little before my attendance on him at this time, I thought it unnecessary to trouble him to make a reply to many inquiries; accordingly I took my leave, at the same time being firmly convinced, in my own mind, that every bad consequence was to be expected from the violent operation of this medicine.

"I was soon too well confirmed in my opinion by Dr. Fordyce's calling upon me at my house, and acquainting me, with much regret, that Dr. Goldsmith, by taking Dr. James's Powders, had done himself so much injury, that he thought it right to propose calling in another physician, as he would not follow his advice, in hopes that, by so doing, the patient would be convinced of the danger of his situation, and consequently be more inclined to conform to the mode of treatment prescribed. Dr. Fordyce said he knew that Dr. Goldsmith had a

great opinion of Dr. Turton; and desired that I would go very early in the morning, and, if I found him no better, persuade him to call in that gentleman. At eight o'clock the next morning I went, and found him much worse. He had passed a very bad night, having vomited several times, and had many loose stools; he lay absolutely sunk with weakness; and I was so very clear respecting the exceeding bad condition he was in, that, instead of fatiguing him with any questions, I immediately exerted my utmost endeavours to persuade him to send for Dr. Turton. To which he (being now, though too late, convinced of his unfortunate mode of proceeding) very readily consented, and desired me to order his servant to go directly. I accordingly did, and the Drs. Fordyce and Turton met at the time appointed, to assist at a consultation, which was continued twice a day till his death."

Notwithstanding the formidable state of prostration to which the patient would seem at this time to have been reduced, the symptoms fluctuated considerably during the ensuing week; sanguine hopes, indeed, were entertained of his recovery. It is related that Dr. Turton, finding but little evidence of active disease, said to him: "Your pulse is in greater disorder than it should be from the state of fever which you have,—is you *mind* at ease?" Goldsmith answered: "It is not." It would appear that a symptom which distressed him much was an inability to sleep, but the mental functions were unaffected; his conversation was perfectly rational, and he was at times even cheerful; but the hopes excited by these flattering symptoms were fallacious, for his end drew nigh. His appetite altogether failed, so that he was unable to take nourishment; his strength, weakened from the first by the powerful action of the antimonial, could not bear up against the want of sleep and the ravages of disease. His death was sudden and unexpected. At midnight, on Sunday, the 3rd of April, he was in a sound and calm sleep, his respiration easy and natural, his skin warm and moist; at 4 A. M., the gentleman who attended

him (Mr. Maxwell, most probably) was called up in haste, and found Goldsmith in strong convulsions; these continued without intermission: he sank rapidly, and breathed his last about a quarter before 5, on the morning of Monday, the 4th of April, 1774.

His death was thus announced in the Public Advertiser of April 5th: "Yesterday morning died, much and deservedly regretted, at his chambers in Brick-court, in the Temple, Dr. Oliver Goldsmith, author of the poems of the Traveller, and Deserted Village, and many ingenious works in prose. He was seized on Friday se'nnight with a nervous fever in his brain, which occasioned his death."

Mr. Newberry, the proprietor of James's Powder, being apprehensive that the reports in circulation, of the death of Dr. Goldsmith having been caused by that medicine, would be prejudicial to its sale, published affidavits from the three persons who acted as attendants upon the Doctor during his illness. These are interesting, as detailing many particulars not otherwise attainable; but although the parties assert that they are ready to verify their statements upon oath if required(*a*), this sort of testimony is open to much objection. As a narrative, the affi-

(*a*) This reminds me of an incident which occurred during the late meeting (1847) of the British Association at Oxford. A party (of which the writer was one) under the guidance of Dr. Buckland, Dean of Westminster, made an excursion to Shotover Hill, near which are some interesting quarries. The party was numerous, and as we moved along our numbers were continually increased by the country people, who were under the impression that a prize fight was in contemplation. On our reaching the summit of the hill a field lecture was delivered by the Dean, in the course of which he remarked, when speaking of certain fossils: "The quarrymen sometimes bring these fossils to me, and declare on *their Bible oath* that they found them in places where I know very well they never existed. Now if any of the quarrymen are present, and I think I see some of them, let them attend to me. Whenever a man comes to me with a wonderful tale, and winds up with 'I'll take my Bible oath on't,' I know perfectly well he is telling me a lie. Truth needs no such assertions; but a man who is conscious that his story is untrue thinks it necessary to bolster it up with strong words, and so tacks

davits are curious, and shew how great was Goldsmith's obstinacy in persisting in his own erroneous opinion; but there cannot be a doubt that the statements are coloured by the parties according to the impression which they wish to convey. There is much suspicion in the eagerness with which they strive to throw odium upon Mr. Hawes,—in the accuracy with which they profess to give the *ipsissima verba* of the conversations, and the anxiety they evince to do away with the notion that James's Powder had anything to do with the death of the patient. They probably felt that blame might in some degree attach to them, as the instruments by which the powder was administered, and, therefore, naturally leant towards that side of the question which would be most likely to exonerate themselves. Mrs. Smith, for instance, goes out of her way to state that, "in justice to the powder, I must declare that I sincerely believe the dose I gave him, and that which was given afterwards by John Eyles, did him no manner of injury." There is clearly no ground for the insinuations thrown out against Mr. Hawes. Being satisfied that the patient was persisting in a wrong course, he first endeavoured to convince him of his error, and, failing in that, recommended the advice of an able physician. The support his opinion received from Dr. Fordyce, and the countenance shewn him by Sir J. Reynolds and Edmund Burke, prove that they, the parties most unprejudiced and best able to judge, attached no blame whatever to his conduct or his treatment.

The first affidavit is from Goldsmith's man servant, the second from his laundress (that is the proper denomination, we believe), and the last from the nurse employed to attend upon him. They appeared in the Public Advertiser of April 29, 1774.

on 'I'll take my Bible oath on't.' I hope that in future you'll remember this." The Dean's shrewd rebuke is not limited in its application to the quarrymen at Shotover.

"I, John Eyles, who attended the late Dr. Goldsmith as his occasional servant, do declare that he was taken ill on Friday, the 25th of March, and went to bed in the afternoon. He ordered me to go for Mr. Hawes, who came about 11 at night, and soon after sent his servant with some leeches and some medicines, which the Doctor did not take. While the leeches were applying the Doctor desired the lad would go back to Mr. Hawes, and fetch some of Dr. James's Powder. The lad returned and brought some powders wrapped up in papers, one of which I gave him, as well as I can recollect, mixed up with capillaire; and after he had taken it, he said it was the wrong powder. He seemed very angry with Mr. Hawes, and desired that I would find a bill that he owed him of about ten pounds, and pay him off the next day; but as the bill was not to be found it was let alone; however, the Doctor was so out of humour with Mr. Hawes that he would hardly even speak to him during the remainder of his illness. The next day, Saturday, the 26th, he was much worse, when he ordered me in the afternoon to go to Mr. Newberry and buy a packet of Dr. James's Powder. Mrs. Sarah Smith, the nurse, came and sat up with the Doctor this night, and I left the powder in her care. The next morning, Sunday, the 27th, I went again to the Doctor and relieved the nurse, and by his desire I divided one of the blue papers of the powder into six parts, and gave him one, and I do not recollect that it had any effect. From this time he took no more of the powder. The truth of the above I am ready to declare upon oath.

"John Eyles."

"I, Mary Ginger, who have attended the late Dr. Goldsmith for near five years past, and was constantly intrusted with the care of his chambers and all his things, do declare, that on Friday, the 25th of March, the Doctor was taken ill with a pain in his head, and went to bed in the afternoon. He continued ill the next day, Saturday, the 26th, and in the af-

ternoon he sent for me to come and sit by him while his servant went to Mr. Newberry's to buy some of Dr. James's Powder. At this time when I asked him how he did, he replied to me, 'I am very poorly; *damn that Hawes*' (those were his very words), 'I ordered him to send me Dr. James's Powder, and instead of that he has sent me some other which has done me a great deal of hurt, and if I had had the right, I should have been well by now.' At the same time, finding himself so much worse, he inquired of me if I could recommend him a nurse. I mentioned to him Mrs. Sarah Smith as a very creditable person, who went to him that very evening, and who informed me of all the circumstances which happened afterwards, and which she has since published. The truth of the above I am ready to declare on oath, if required.

"Mary Ginger,
"Wife of John Ginger, Head Porter of the Hon. Society of the Middle Temple."

"I, Sarah Smith, who attended Dr. Goldsmith as nurse in his last illness, do declare that I was sent for on Saturday, the 26th of March, the day after he was taken ill. He seemed very low, and complained against Mr. Hawes for sending him, the night before, the wrong powders, asserting that if he had had Dr. James's Powder it would have done him good, whereas this had made him so much worse; he frequently during the remainder of his illness complained in the same manner of Mr. Hawes, and did not ever afterwards choose to speak to him, which Mr. Hawes took notice of to me. About 11 o'clock on this Saturday night (as I have before related in the public papers), I administered to him, by his desire, one-third of a paper of Dr. James's Powder, which his servant had bought at Mr. Newberry's. About 1 o'clock it began to make him sick, and I gave him several basons of chicken water, which he vomited up clear off his stomach in a gentle way. After this he had four or five small stools in the course of the night. About 10 o'clock on the next morning, Sunday the 27th, I left him

much in the same state he was in when I came to him the night before. I returned again at 6 o'clock in the evening, when his servant informed me that he had given the Doctor another dose of the powder in my absence, which was only a sixth of a paper, and which was attended with no operation at all. This was all the powder he took during his illness, for I was constantly with him afterwards. This very evening the Doctor again complained, in very harsh terms, of Mr. Hawes's behaviour in regard to the powder he had sent him, and seemed angry that John, his servant, could not find a bill Mr. Hawes had delivered in, in order to pay him off; but he insisted on my going this evening for Mr. Maxwell, an apothecary, who lives opposite St. Dunstan's Church. When Mr. Maxwell came, the Doctor pressed him very much to send him something back, but as Mr. Hawes had attended him, he was very unwilling to comply. However, after the most earnest solicitations from the Doctor, he at last sent him in a small gallipot an electuary, of which the Doctor only took a piece of about the size of a nutmeg. After this he followed the advice of his physicians. He did not die till the Monday se'nnight afterwards. On the night of the Doctor's funeral, Mr. Hawes, at his house, desired that wherever I went I would never recommend Dr. James's Powder; for he said it had been the occasion of Dr. Goldsmith's death. I replied to him, that what I gave him had but a very gentle operation, and mentioned the particulars of it as above. He returned for answer, that the violent operations had happened before I came to the Doctor. However, in justice to the powder, I must declare that I sincerely believe the dose I gave him, and that which was given afterwards by John Eyles, did him no manner of injury. The truth of the above particulars I am ready to confirm on oath, if required.

"Sarah Smith."

These affidavits were met by counter-statements in the

Public Advertiser of May 4, 1774, from Edmund Deans, Mr. Hawes's servant, and Mary Pratt, his maid, relative to the genuineness of the James's Powder; and from a friend of Mr. Hawes, Mr. Townsend, of Fleet-street, who was present at the conversation which Sarah Smith professes to detail as having passed between Mr. Hawes and herself, relative to the recommendation of the powders,—the correctness of which account he denies. It is to be regretted that neither of the physicians in attendance upon this interesting case made known the facts which came under their observation; but there can be no reasonable doubt entertained that the melancholy result was to be ascribed to the great exhaustion and expenditure of vital powers produced by the large and repeated doses of a medicine, powerful in its action, uncertain in its operation, and highly improper under existing circumstances.

It was at first proposed to honour the remains of the poet with a public funeral, but for this was substituted a monument in Westminster Abbey. The Public Advertiser of the 12th of April thus announces the interment: "On Saturday evening the remains of the late Dr. Goldsmith were interred in the Temple. The mourners who attended the corpse were Mr. John Day, Mr. Hugh Kelly, Mr. Robert Day, Mr. Palmer, Mr. Etherington, and Mr. Hawes."

It is well known that he was a prominent character at "The Club," and that the members, relying upon his extreme good nature, frequently indulged themselves in witticisms at his expense. On one particular evening it was proposed to write epitaphs upon the poet, whose dialect, appearance, dress, and character, afforded ample scope for satire.

Goldsmith seems to have borne the fire of wit with great good humour, and at the following meeting produced his admirable poem of "Retaliation." This was his last appearance among those friends who loved him when living, and mourned him when dead, with true affection. Edmund Burke was so overcome at the intelligence of his decease, that he burst into

tears. Sir Joshua Reynolds laid aside his painting materials (for him a great effort), and shut himself up during the remainder of the day; and the stern and rugged Johnson has left on record his opinion of the merit of Goldsmith, not only in his correspondence, and in that graceful epitaph which adorns the walls of Westminster Abbey, but by the high eulogium passed upon his departed friend in his Lives of the Poets:

"The life of Dr. Parnell," he says, "is a task which I should very willingly decline, since it has been lately written by Goldsmith,—a man of such variety of powers, and such felicity of performance, that he always seemed to do best that which he was doing; a man who had the art of being minute without tediousness, and general without confusion; whose language was copious without exuberance, exact without constraint, and easy without weakness."

I have collected the foregoing particulars of the last illness of Goldsmith, which, even at this late period, will not be, I trust, devoid of interest; and I have this gratification from my attempt, that it gives me an opportunity of paying a tribute to the memory of this great and good man.

"Τό γὰρ γέρας ἔστι θανόντων."

Art. IV.—*Observations on a Case of open Foramen Ovale, in which the Circulation was remarkably deranged.* By Robert Mayne, A.B., M. B., Physician to the South Dublin Union Workhouse, and Lecturer on Anatomy and Physiology at the Richmond Hospital School of Medicine, &c., &c.

Pathologists have long been conversant with certain imperfect conditions of the septum cordis, the result usually of malformation, but which may perhaps be occasionally traceable to disease. I allude to that class of cases in which either the partition between the ventricles, or that between the auricles, or both, are defective, so that the right cavities of the heart communicate *directly* with the left.

I shall for the present confine myself to that variety of malformation commonly known as the open foramen ovale, in which the partition between the auricles is imperfect.

One of the consequences of this organic defect is, to permit the venous blood to pass, in quantities more or less considerable, from the right side of the heart directly into the left, without traversing the lungs or undergoing the process of respiration. The assemblage of symptoms produced in this manner by the admixture of the venous with the arterial current at the *left* side of the heart, and the consequent circulation, throughout the system at large, of blood imperfectly aerated, constitutes a form of cyanosis, well known to physicians. Comparative anatomists are also aware, that the human circulation, thus perverted, is somewhat analogous to the normal plan of the circulation in many of the reptile tribes, and that individuals so afflicted resemble in certain functions the animals to which they may (not inaptly) be considered as blood relations.

The records of medical science abound with examples of cyanosis thus produced, and it is, therefore, unnecessary to pursue that part of the subject further in the present communication.

Other cases there are in which the foramen ovale remains permanently open *without* producing cyanosis; and certain it is (let the explanation be as it may) that a patent condition of the aperture in question is compatible with a long life, and with a healthy condition of the circulatory and respiratory functions.

Much ingenuity has been displayed by writers, particularly those of the French school, in attempting to explain such dissimilar results from one and the same organic lesion. In many instances, where an open foramen ovale produces *no* disturbance of function, the valvular disposition of the aperture, or its small size, prevents any interchange of the venous and arterial blood; and in others, the ventricles, the auriculo-ventricular, the pulmonary, and the aortic orifices, retain their proper dimensions,

and the auricles their just proportions, so that the blood at either side of the septum flows onwards in its natural course, without impediment, and, consequently, no intermixture arises.

There is still, however, a third class of cases of the same malformation. In these, arterial blood passes from the left side of the heart into the right, through the open foramen ovale, and thus a mixture of arterial with venous blood taking place in the right auricle, the current transmitted to the lungs for aeration is a mixed fluid, consisting partly of venous and partly of arterial blood. This deviation from the natural course of the circulation is the converse of that already described as producing cyanosis; in the one, the current flows from the right auricle into the left, depriving the lungs of a portion of the blood which ought to circulate through them, and supplying the system at large with a mixed fluid, partly venous and partly arterial, thus causing cyanosis ; whilst in the other, the current flows from the left auricle into the right, depriving the system at large of a portion of the blood which ought to supply it, and transmitting to the lungs a mixed fluid, partly venous and partly arterial.

In the following case lately under my care, the circulation was carried on in the manner *last* described, and its rarity induces me to lay the particulars before the profession.

Sarah Rochford, aged 27, came under my observation in July, 1845. She was of middle stature, and of spare make; her countenance was pale ; and she never at any period exhibited the slightest tendency to cyanosis. Her symptoms were in a great measure those of heart disease, but from their obscurity its exact nature was not suspected. She complained of wandering pains in various parts of the chest, dyspnœa and palpitations on the slightest exertion, together with a constant, short, dry, teasing cough, very hysterical in character. She had a most uncommon aversion to the slightest change of position, and obstinately refused either to dress herself or to rise from bed ; it was a matter of difficulty to obtain even an exa-

mination of the chest, so very irksome was the sitting posture to her; and she persisted in declaring herself utterly unable to move, and that her death would be the consequence of any attempt at exercise.

As she lay in bed her countenance was not expressive of heart disease. The respiration was tranquil, and little, if at all, accelerated; the pulse was regular, soft, small, and from 80 to 90 in the minute; but whenever she attempted to walk palpitations were induced, the pulse became frequent and irregular, and the breathing hurried and distressing. There was no pulsation nor undue distension of the jugular veins, nor had she throughout the slightest tendency to anasarca or other dropsical symptoms.

A remarkable feature of her case was constant sweating; unlike that of hectic, it was unceasing; whenever examined she was found steaming, and bathed in perspiration, so that her linen was at all times saturated with moisture. The cutaneous secretions were also most offensive, the odour exhaled from her person being almost insupportable.

Her appetite was wretched; she seemed to have little or no desire for nourishment; the attendants often expressed their surprise that nature could subsist on the incredibly small quantity of food consumed by her; yet emaciation proceeded slowly, considerable muscular development remaining even to the close of her life.

Her bowels were always torpid; many days would elapse without a stool, unless from the effects of purgative medicine. The urine was healthy, but in small quantity. The uterine functions were defective, for she menstruated at intervals of three or four months only, and even then the catamenia were scanty.

The cerebral functions were sluggish; she seemed lost in despondency, and would relate nothing of her previous history, appearing to be as incapable of mental as of bodily exertion.

The chest was carefully explored on several occasions, and

uniformly with the same results. On percussion it yielded the natural clear sound over the entire surface of both lungs, the region of the heart alone being unusually dull. *The respiratory murmur was everywhere excessively feeble*, and but little augmented by coughing, or by deep inspiration. There were no râles audible in any part of the chest.

The dulness produced by the heart was traceable upwards as far as the costal cartilage of the third rib, and extended beyond the ordinary limits of the cardiac region in every direction, but there was no fremissement, and the rhythm was natural. A loud *bruit de soufflet* accompanied the first sound, and was never absent; it was most intense at the sternal extremity of the fourth rib on the left side, and appeared to be confined to a very small space, for it was inaudible at the apex of the heart, nor could it be traced upwards along the course of the aorta.

The second sound was perfectly distinct, and unaccompanied by any bruit.

For two years after the particulars of her case were noted, this wretched creature lingered on in a miserable state of existence; she seemed to improve a little during the summer of 1846, but the amendment was only temporary. In the month of July last, at one of my visits, I was surprised to find her sitting up and dressed; she had taken a fancy to change the ward, and insisted on walking across the court-yard for that purpose: this exertion was too much for her; during the ensuing night she was observed to breathe heavily, and she expired suddenly before any medical assistance could be obtained.

AUTOPSY, TWENTY-FOUR HOURS AFTER DEATH.

Head.—The brain was rather softer than natural, but not in other respects unhealthy.

Chest.—The cavity of each pleura contained about a pint of bloody serum, remarkably dark in colour. The lungs were congested to an extraordinary degree, and the engorgement affected all parts of the pulmonary structure. The trachea and

bronchial tubes, to their smallest ramifications, were filled with a frothy, sero-sanguineous fluid; this was so abundant, that the tubes, after being sponged, were repeatedly choked by it. The bronchial mucous membrane was purple from vascularity. The surface of the lungs, in various situations, was of a purple colour, as if apoplectic; the parenchyma was everywhere heavy, and, when incised, an immense quantity of bloody serous fluid exuded from it. At the posterior thick edge of each lung, the pulmonary tissue was solid, and of an exceedingly dark colour; the upper lobe of the left was also solid, and of a dark red colour, but whether pneumonic or apoplectic it was difficult to determine.

The heart, brought into view by laying open the pericardium, seemed much enlarged, its increase in size being due to a vast preponderance of the right side of the organ. The apex of the heart, preternaturally rounded, lay farther to the left side than usual, and the long axis of the organ had undergone a change of direction, being unusually horizontal, and at the same time considerably lengthened. None of the left ventricle was visible on the anterior surface of the heart, the apex being constituted by the right ventricle solely.

The cavity of the right auricle was of at least double its ordinary dimensions, whilst its parietes had undergone very considerable hypertrophy, the musculi pectinati in particular being excessively developed. Between the auricles a large aperture of communication existed; it was circular, and of sufficient size to permit a half-crown piece to traverse it readily. The edge of this opening was regular, and almost tendinous in appearance; there was no indication either of softening or of ulceration in any part of the auricle, nor was there any valvular provision to interfere with the blood in traversing the unnatural opening. The Eustachian valve was totally absent. The right auriculo-ventricular orifice, considerably increased in dimensions, allowed four fingers to traverse it; the tricuspid valve, rather thicker than usual, but in other respects healthy,

was in size proportional to the orifice. The right ventricle was greatly increased in capacity, and its walls had undergone an extraordinary amount of hypertrophy; viewed from within it resembled a *left* ventricle, in the thickness of its walls, in the strength of its carneæ columnæ, and in appearing to appropriate the septum of the ventricles to itself exclusively. The pulmonary orifice was of large size, it permitted three fingers to pass; the valves of the pulmonary artery were healthy.

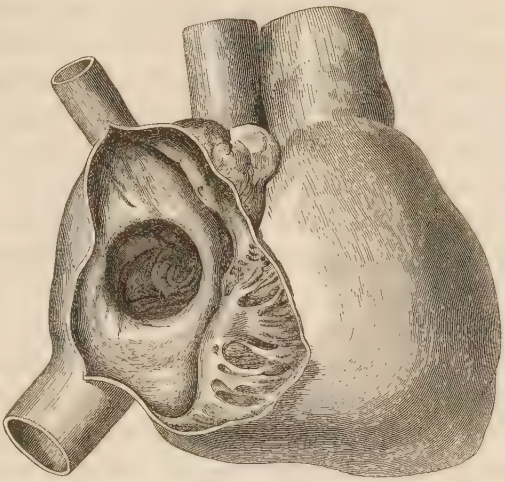
When the heart was raised, the left ventricle was found quite diminutive; it resembled in appearance that of a child about eight years old; its point terminated abruptly at a considerable distance from the apex of the heart, and its walls were much thinner than those of the right ventricle.

The left auricle presented its natural dimensions: laid open it displayed the enlarged and persistent foramen ovale, with exactly the same appearances as in the right auricle; the walls of the left auricle were healthy. The left auriculo-ventricular orifice, remarkably contracted, permitted, with difficulty, the points of two fingers to pass; the mitral valve was considerably thickened, and the posterior flap was manifestly shortened so as to permit regurgitation. The aortic orifice transmitted but one finger; the aortic semilunar valves were healthy.

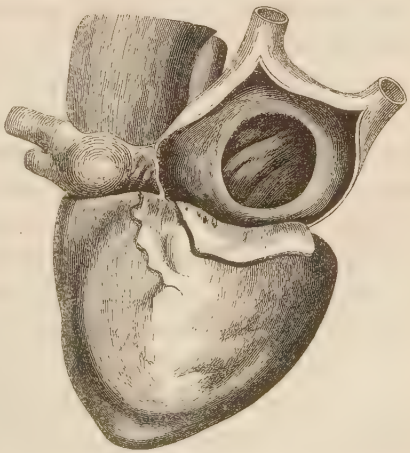
The great vessels exhibited a disproportion similar to that of the ventricles from which they respectively sprung; thus the pulmonary artery was of enormous size, whilst the aorta was diminutive; and the same disparity prevailed along the two arterial trees; for the right and left pulmonary arteries were excessively large, whilst the abdominal aorta, just above its bifurcation, admitted the little finger with difficulty. *The ductus arteriosus was impervious.* The venæ cavæ were small, being in proportion to the aorta; the pulmonary veins were, on the contrary, large at both sides, like the pulmonary arteries.

Abdomen.—The glandular viscera subservient to digestion were all healthy; the stomach and bowels presented no lesion; but the coats of the small intestines were remarkably thin, and

almost diaphanous. The urinary organs were sound; the uterus was normal; the left ovary presented two small spots, the size of split peas, apparently melanotic.



The annexed wood-cuts represent the heart on a reduced scale. This first view exhibits the right side of the organ with the right auricle laid open; the foramen ovale persistent; the right ventricle of large dimensions, its walls hypertrophied, and forming the apex of the heart; and the pulmonary artery, to the extreme right of the top of the figure, of excessive size, whilst the aorta adjoining it is diminutive.



The second view shews the left side of the heart in striking contrast with the other. The left auricle is laid open, the foramen ovale persistent, and the left ventricle diminutive, the apex of the heart being formed by the right ventricle.

In this case, owing to the small size of the *left* auriculo-ventricular, and of the aortic orifices, together with the diminutive proportions

of the left ventricle, the aerated blood, on its arrival at the left auricle from the lungs, was unable to pass onwards in full quantity to the system; the surplus, therefore, escaped into the right auricle through the imperfect septum, and speedily regained the lungs,—the excessive development of the orifices and chambers of the right side of the heart, and the large caliber of the pulmonary artery, affording it every facility to pursue this unnatural course. In a word, there was the anomaly of *red blood returning to the lungs*, after a short circuit though the heart, *without going the rounds of the systemic circulation*, whilst the system at large was supplied with arterial blood undoubtedly, but in insufficient quantity.

J. F. Meckel, in his Tabulæ Anatomico-Pathologicæ, Fig. 3, Plate I., has figured a heart similar in every respect to that just described: he knew nothing of its history, but, reasoning on general principles, he adds: "In this case, if I be not mistaken, the blood must have gone, *not* from the right side of the heart into the left, but contrariwise from the left side of the heart into the right."

The following paragraphs, from Corvisart, "Essai sur les Maladies du Cœur," shew that he had been led by anticipation to consider the probable consequences of such derangements in the circulation:

"De ces considérations on pourrait peut-être inférer que dans ces sortes de cas j'admets le passage du sang veineux dans les cavités gauches, et son mélange avec le sang artériel, sans admettre le passage du sang artériel dans les cavités droites et son mélange avec le sang veineux. Mais j'observe que je n'ai prétendu appliquer ces explications qu'aux seuls faits dont j'ai tracé l'histoire, et dans lesquels je pense que les choses se passaient ainsi. Peut-être un jour aura-t-on occasion de faire l'observation inverse, c'est-a-dire qu'on pourra rencontrer des cas dans lesquels l'une ou l'autre des perforations dont j'ai parlé existant, les cavites gauches auraient acquis ou conservé une force prépondérante; alors le sang artériel des

cavités gauches étant poussè dans les droites, il en resulterait nécessairement le mélange du sang artériel avec le sang veineux, et non comme dans le premier cas, du veineux avec l'arteriel.

" Les distinctions que je fais ici de ces differens mélanges peuvent paraître peu importantes au premier aspect; mais en y réfléchissant un peu, il sera facile de sentir que le mélange du sang artériel avec le sang veineux dans les cavites droites doit altérer l'economie animale d'une tonte autre manière que le mélange du sang veineux avec le sang artériel dans les cavites gauches. Ainsi, dans le premier cas (celui du passage du sang artériel dans les cavités droites qui contiennent le sang veineux) quelle doit être la fonction principalement derangée? C'est sans contredit la sanguification ou les changemens chémiques que le sang doit subir dans le poumon parce que la réspiration, au lieu d'agir sur un sang privé, comme il doit l'être lorsqu'il entre dans les artères du poumon, de plusieurs principes qu'il doit avoir perdus dans la circulation générale, sera déjà chargé d'une partié des élémens qui doivent lui être fournis par l'acte méme de la réspiration, d'un sang en un mot quin'a presque plus besoin d'une élaboration qu'il viént de subir à l'instant."

Bertin(*a*), Bouilland(*b*), Louis(*c*), and Hope(*d*), have all admitted that arterial blood occasionally passes into the right side of the heart, through an imperfect septum cordis; and to this cause some of them have attributed the hypertrophy of the right side of the organ which so frequently accompanies that malformation, but by none of these authors has the subject been fully discussed.

Cases exactly similar to Rochford's are of rare occurrence. Of the numerous examples now on record of *congenital* communications between the right and left cavities of the heart, a

(*a*) *Traité des Maladies du Cœur et des gros Vaisseaux.*

(*b*) *Traité Clinique des Maladies du Cœur.*

(*c*) *Recherches Anatomico-Pathologiques ; Communication des Cavites droites et Gauches du Cœur.*

(*d*) Treatise on Diseases of the Heart.

very small proportion have had contractions of the orifices of the *left* side of the organ, whilst in the majority the orifices at the right side have been contracted. The reverse is the order of frequency of contractions resulting from disease, *morbid* contractions of the left auriculo-ventricular or of the aortic orifices being excessively common, whilst a similar condition of the right auriculo-ventricular or of the pulmonary orifices is rare. Of twenty cases of communication between the right and left sides of the heart, collected by Louis, *one only* had either the left auriculo-ventricular or the aortic orifice contracted, whilst there were ten out of the twenty with contraction of the orifice of the pulmonary artery, and one with occlusion of the right auriculo-ventricular opening. Of fifteen cases reported by Bouilland, ten had contracted orifices, and in eight out of the ten the orifices at the *right* side were those engaged. Of fifty-three cases of cyanosis referred to by Cintrac, twenty-seven had contracted orifices, the contractions in every one of the twenty-seven being at the right side of the heart.

Herein then consists the peculiarity of Rochford's case. *The left orifices* of the heart were *contracted*,—*the right* were *enlarged*.

In reviewing this very interesting case, our first feeling is one of surprise that, with such serious derangement of the circulation, life could have been so far prolonged; in this respect, however, it resembles many recorded cases, where, with an equal amount of malformation, the same, or even a much greater age, has been attained.

By inquiries instituted after her death, it was ascertained that Rochford had never enjoyed good health, having always been subject to cough and dyspnœa; yet for a time she discharged the duties of a domestic servant, until increasing infirmity rendered her unequal to exertion. The latter years of her life were spent in a state of perfect inactivity.

With a very free communication between the right side of the heart and the left, there was in this case no cyanosis,

because none of the black blood intermingled with the arterial stream. In offering this explanation, I am aware that Bertin, Louis, and others, have endeavoured to shew that the blue colour of cyanosis is produced, *not* by the mixture of black blood with the red, but by obstructions to the circulation at the right side of the heart, and a consequent engorgement of the general venous system. These writers have adopted this opinion in consequence of many cases of imperfect septum cordis being unaccompanied by cyanosis, whilst a blue colour sometimes occurs in organic affections of the heart and lungs, in which no admixture of the venous with the arterial blood is possible.

To give the first part of this argument, however, any value, it should be shewn that the current flows from the right side of the heart into the left *whenever* the septum cordis is imperfect; whereas the case just recited renders it extremely probable that the course of the blood in such lesions is sometimes diametrically the opposite.

A very remarkable feature of Rochford's case was the feebleness of the respiratory murmur over all parts of the chest, *without collateral evidence that any of those lesions existed either in the lungs, the pleura, or the great vessels which usually render the respiration obscure.* The diminished intensity of the respiratory murmur I am strongly inclined to attribute to the *quality* of the blood which circulated through the lungs, of which a large proportion had come from the right side of the heart *already arterialized.* Blood of this description must have required less aeration than the corresponding blood in a healthy subject, which, on leaving the heart, is always perfectly venous; and the demand for air being therefore limited, a diminished activity of the respiratory function was the consequence.

The uncommon dislike evinced by the unfortunate subject of these observations to the slightest change of position, and the immediate dyspnœa and palpitation consequent on every

movement, find a satisfactory solution in the state of her heart. The extraordinary development of the right side of the organ, and in particular the amazing strength and great capacity of the right ventricle, were calculated to determine unduly to the lungs whenever the action of the heart was accelerated; and that this aversion to move was instinctive on her part, and essential to her very existence, may be inferred from the fatal pulmonary congestion (the result of an unusual though trifling exertion) by which her life was so suddenly terminated.

The torpor of the digestive system, the brain, and the uterus, may have arisen from the scanty supply of arterial blood transmitted to the several organs by the diminutive aorta.

The excessive secretions from the skin, and the small amount of the ingesta, afford to the physiologist a wide field for speculation.

The extensive dulness of the præcordial region resulted from the hypertrophied condition of the right side of the heart; but it may be a question whether the *bruit de soufflet* was produced at the preternatural opening between the auricles, or at the left auriculo-ventricular orifice. The latter explanation is the more plausible of the two, because the mitral valve permitted some slight regurgitation, and the *bruit* was distinctly systolic. The excessively small size of the left ventricle, and its unnatural position as regards the apex of the heart, may account for the site in which the *bruit de soufflet* was heard, and its absence in the situation where the murmur is usually audible in mitral valve disease.

The diagnosis of unnatural communications between the right and left chambers of the heart is confessedly most difficult. In the words of Bouilland it may be said that "there is nothing in the symptoms which might not equally belong to other diseases of the heart, such as diseased valves, contracted orifices, &c." And, as Louis expresses himself: "The symptoms assigned to this communication, viz., blue colour, faint-

ings, sensibility to cold, suffocations, &c., are only the exaggeration of the ordinary symptoms of heart disease, and are often absent. The only certain symptoms of the communication in question is a suffocation more or less considerable, accompanied or followed by faintings, with or without blue colour of the entire body, and *produced by the slightest causes.*"

May we not venture from the foregoing details to set down *a remarkable feebleness of the respiratory murmur* as a corroborative sign, in certain cases, of this malformation?

Art. V.—*Observations on Œdema of the Glottis, occasioned by the Attempt to swallow boiling Water: illustrated by thirteen Cases.* By William Jameson, M. D., F.R.C.S., one of the Surgeons to Mercer's Hospital, Physician to St. Peter's Parochial Dispensary, and consulting Accoucheur in Ordinary to the Coombe Lying-in Hospital.

One of the most frequent causes of œdema of the glottis in young children, occurring in hospital practice, is that occasioned by the attempt to drink boiling water out of the spout of a kettle. I say, attempt to drink, for, I believe, in most instances, the steam is merely inhaled; and on very few occasions, if ever, is the water swallowed, owing to the supervention of spasm the moment it is taken into the mouth, which causes it to be immediately rejected.

As several cases of this affection have come under my observation in Mercer's Hospital, which called for the operation of tracheotomy, I think the recital of them may not be considered uninteresting, as some were attended with difficulties in their performance, of practical importance, not sufficiently dwelt on by any author that I am acquainted with, and that are very necessary for the surgeon to bear in mind when called on to perform this operation; also shewing us what cases call for its adoption, and those which can be treated without having recourse to it.

Case I.—The first case that I shall detail is that of James Kinselagh, aged two years, a fine, healthy child, who attempted to swallow boiling water from the spout of a kettle, at 9 o'clock A. M., on the 23rd January, 1842. The child, after crying violently for some time, fell into a sound sleep, which lasted for four hours, but on its awaking it complained of soreness of throat, difficulty of breathing, and painful deglutition.

The mother conveyed him to Mercer's Hospital at 2 o'clock, P. M., and immediately on his admission the resident pupil had four leeches applied over the upper bone of the sternum ; but, as the symptoms were not relieved I saw him shortly after, when I found him with his head drawn back, breathing with great difficulty, stridulous, each inspiration being much shorter than the expiration, consequently the thorax was scarcely more than half filled ; countenance pale, and expressive of great suffering ; surface cold No blisters were detected on the inside of the cheeks or mouth, but the epiglottis was erect, and a little swollen; pulse 120. I had an emetic at once administered, and hot jars applied to his feet.

At 4 o'clock, P. M., the breathing was more difficult and croupy ; chest dull on percussion ; face and lips swollen, and a little lead-coloured ; eyes fixed ; head thrown very much back; pulse 130; surface cool; inclined to stupor; epiglottis a little more swelled, and erect as before.

In the absence of my colleagues I had the assistance of Dr. Hargrave, who fully concurred with me, under the circumstances, that tracheotomy held out the only chance of saving his life; accordingly, at 5 o'clock, P. M., being eight hours after the accident, I performed the usual operation.

Having first secured the body and arms of the child tight, by rolling it up in a blanket; then placing it on a table, the head being well held back, I made the usual incisions along the median line from the upper bone of the sternum, so as to reach the inferior edge of the thyroid cartilage, cutting cautiously between the muscles till I got to the fascia covering the

trachea. Up to this period of the operation I was not in the least embarrassed by any blood. Having then cut through the fascia, I seized the trachea with a small double hook with difficulty, in consequence of its great depth and the rapidity of its motion up and down in the bottom of the wound. This instantly produced a violent spasm and attempt at coughing. With a scissors I then cut out a circular piece of the trachea, occupying a portion of two rings, about the size to admit a large pea. This was followed instantly by very smart hæmorrhage from some of the thyroid veins, part of which flowed into the trachea, and nearly suffocated the little patient. However, he came to by suddenly holding him up, grasping the lips of the wound, placing a tube in the trachea, applying stimulants to the nose, giving him warm wine and water, the application of hot flannels, and also small doses of camphor mixture. By these measures he was sufficiently restored to be placed in bed, in a very weak, collapsed, and low state.

I found it now necessary to remove the pipe from the trachea, as it was too short to be got satisfactorily into it. This was instantly followed by another gush of blood, some of which also got into the trachea, and nearly suffocated him. However, with a violent effort, he was able to cough it up, and he was left in charge of the resident pupil, breathing freely through the wound.

At 8 o'clock, P.M., he was sleeping soundly, breathing freely through the wound, which, from time to time, had to be cleared of the mucus by means of a sponge. The countenance was not indicative of pain, pulse not so frequent; warmth well generated. Ordered one grain of calomel, with the eighth of a grain of tartarized antimony, every second hour through the night, and whey *ad libitum.*

24th. At visiting hour this morning he was reported to have passed a quiet night; had no return of the hæmorrhage; breathes freely through the wound, which frequently required

to be freed from the mucus, which collected in large quantities from time to time; countenance lively; pulse 120. As the bowels were not moved since yesterday, an emollient enema was directed to be administered, and the powders to be continued, at intervals of four hours each.

25th, second day. Bowels several times disturbed during the night; slept pretty well between intervals; slight bronchitis; increased discharge of mucus, which is very embarrassing at each attempt at coughing; pulse 130, and weak. To discontinue the powders, to have a starch and opium injection administered immediately, and repeated, if necessary, in two or three hours: to have chicken tea.

4 o'clock, P. M. Got two enemas, which came away shortly after they had been given; and as the diarrhœa continued, he was ordered Dover's Powder, with mercury and chalk, every third hour, and to have arrow-root, with port wine. This had the effect of checking the attack in the bowels, and procuring sleep, but the bronchitis appeared to be on the increase.

26th. But little change since yesterday; and although he looks better, is cheerful, and the pulse reduced in frequency, still there is evidence of increased bronchitis, and slight pneumonia at the bases of both lungs. Powders, with calomel, hyd. c. cret., hippo, and Dover's Powder, were given at intervals, and leeches and blisters applied to the chest, but without effect. The lungs became engorged, respiration was reduced to a mere pant, and he ultimately died on the morning of the 28th, on the fifth day after the operation. I was not able to procure a *post mortem* examination.

That the operation prolonged life in this case I have little doubt; and had it not been for the extensive bronchitis, with the pneumonia which supervened, the case might have had a more fortunate termination.

Now it occurred to me that the bronchitis which so frequently follows this operation is produced by the cold air passing directly into the trachea without first acquiring heat and

moisture, as it does under ordinary circumstances in its passage through the nose and mouth; and, consequently, if this be true, an operation performed in the depth of winter, as this one was, is more likely to be followed by this species of attack; therefore it is advisable to have the apartment of a patient on whom this operation has been performed kept as warm as possible.

The following cases may be considered to favour this view.

Case II.—Thomas Mack, aged two years and three months, was admitted into Mercer's Hospital at 12, A. M., on the 9th of May, 1842, under Mr. Read's care, in consequence of having drank some boiling water out of a kettle at 9 o'clock, A. M. His mother, shortly after the accident, consulted an apothecary, who gave her some oil and lime-water to rub the part with; but as his breathing and deglutition became difficult, she sought advice at the hospital. As the symptoms were not very urgent, an emetic was ordered in the first instance, and at 3 o'clock, P. M., it was seen again in consultation, when, all the usual symptoms being present, viz., the difficult and croupy respiration, swelled, pale face, inclination to stupor, cold surface, and quick, small pulse, it was at once agreed to open the trachea, which was performed in the usual way. There was no hæmorrhage of any account, the trachea, in this case, lying very superficial, and perfectly quiescent; it, therefore, was easily seized with the double hook, and a portion of three of its rings removed with a pair of scissors: there was neither spasm, hæmorrhage, nor any fit of coughing produced on its being opened.

The child breathed freely at once through the wound, got a little wine and water, and was placed in bed with hot jars to its extremities, a good fire was ordered to be kept in the ward, and a little wine and water to be given from time to time.

On revisiting it in the evening the face was pallid, pulse quick and feeble, respiration hurried; inclined to coma. A

large blister was ordered to be placed along its spine, to be kept on for three hours; to have a grain of calomel every hour; arrow-root and wine through the night.

10th, 9 o'clock, A. M. Passed a quiet night; blister rose well; breathes freely through the wound; mucus obliged to be removed frequently with a sponge. Ordered small doses of calomel, with hydrargyrum cum cretâ and Dover's Powder, every hour.

At 10 o'clock, P. M., in consequence of considerable dulness existing under the left clavicle, with puerile respiration in the right lung, three leeches were ordered to be applied under the left clavicle; the powders to be continued.

11th. Leeches bled well; passed a quiet night; in all respects going on well. As he has had fifteen grains of calomel and twenty-four of hydr. c. creta, the calomel was ordered to be omitted from the powders, and the interval between the doses increased to three hours, and if diarrhœa should set in, to give the Dover's Powder alone; to have arrow-root and port wine, and chicken tea and whey if necessary. It is observed that whenever he wakes up from sleep he has a violent fit of coughing, which gets rid of a quantity of mucus through the wound, that has collected during sleep.

It is unnecessary to give a daily report of this case; suffice it to say, he continued to improve daily, and on the sixth day we were able to draw the lips of the wound partially together with sticking-plaster, as he breathed partly through the mouth and nose.

On the 31st of May he was discharged cured, the wound in the neck being quite healed, and the voice having completely returned.

A warm atmosphere having been kept up in the ward during the whole treatment of the case, tended, in my opinion, materially to assist the other measures adopted, and the following case also corroborates this idea.

Case III.—Edward Lee, aged one year and ten months, re-

siding at Kilgobbin, was admitted into Mercer's Hospital, on the 9th October, 1842, at six o'clock, P. M., in consequence of having attempted to drink boiling water from the spout of a kettle at eleven o'clock in the morning (seven hours previous to admission). It appears he suffered no inconvenience at the time, still his mother gave him some melted butter to drink, which vomited him; shortly after he ran about the fields, and ate some blackberries. At 2 o'clock in the day his mother offered him some fried bacon, which he could neither chew nor swallow; and then, for the first time, she observed his breathing to be greatly affected, and, in consequence of this symptom increasing, sent for Mr. Fox, the medical incumbent of the neighbouring dispensary, who recommended her bringing him instantly to hospital.

On his arrival his symptoms were found to have increased rapidly while being conveyed to town, viz.: the stridulous breathing, dulness over the whole chest on percussion, difficult deglutition, congested countenance, quick, small pulse, and fast-increasing stupor. In consultation it was deemed advisable to operate. Accordingly, having placed him on a table, I performed the usual operation. The trachea, being rather superficial, was soon exposed, without much loss of blood, as no vein of any magnitude was divided; little or no spasm occurred upon the trachea being seized with the hook; and, on the piece being removed, the child breathed freely through the wound; congestion of the face disappeared, and he was restored to consciousness. However, there was a substance at the inferior angle of the wound which was sucked over the opening into the trachea at each inspiration, and which acted as a valve; this at first was conceived to be a portion of the thymus gland, but, having seized it with the forceps, I removed it, and on examination found it to be an enlarged lymphatic gland about the size of an almond.

The child being now able to breathe freely through the wound, was placed in a warm bed with hot jars around it;

and, when reaction set in, calomel, James's Powder, and Dover's Powder, were administered every third hour; the nurse having received directions to have a good fire kept in the ward.

10th. At visiting hour this morning he was reported to have passed a quiet night, looks cheerful, breathes through the wound, from which the mucus is required to be frequently removed with a sponge; chest sonorous throughout; pulse quiet; slight vesications on the inside of the cheeks; no bronchitis. To continue the powders and have some whey.

In the evening, in consequence of his face becoming flushed, respiration hurried, and pulse quick, two leeches were applied under the clavicle.

11th. This day he is in all respects better; breathing relieved; pulse 90; no evidence of bronchitis; bowels regular.

On the fifth day he had so far recovered that he had some chicken broth with a little bread in it, and all medicines were omitted: on attempting to cry there is some voice.

On the eighth day, in consequence of an increased secretion of mucus, attended with difficulty in getting it through the wound, he got an emetic, which gave him great relief. On the following day, as he breathed partly through the mouth, and the wound had a granulating healthy surface, the edges were partially approximated with sticking plaster. On the following day they were drawn into perfect apposition.

26th. The wound in the throat is completely healed; his voice restored, which his mother states to be even *clearer* than before the accident. On the 31st he was discharged cured.

It sometimes happens that a patient never appears to recover from the shock produced on the nervous system from the operation; this is exemplified by the following cases.

Case IV.—Lissy Cosgrave, aged one year and seven months, was admitted into Mercer's Hospital, at 3 o'clock, p. m., on the 21st March, 1842, in consequence of having attempted to swallow boiling water from the spout of a kettle three hours previously.

The symptoms were not urgent. There was no vesication about the lips or mouth, and the difficulty of breathing was not remarkable. An emetic was administered, and the child visited by Mr. Tagert and myself at 4 o'clock, P. M. We found that the emetic had acted sufficiently, but that she was pale, pupils dilated, eye-lids half open; inclined to coma; pulse quick and weak; breathing stridulous and hurried. Under these circumstances it was determined to operate. The child was accordingly placed on a table with that intention, when she shewed symptoms of rallying; its countenance brightened up; it cried; called its mother, whom it recognised; drank some whey freely; the breathing became less embarrassed, and we now considered that this partial state of stupor was caused, in all probability, by the action of the emetic, from the effects of which she was then rallying.

Under these circumstances it was agreed to defer the consideration of the operation till Mr. Read should see it (whose case the child was). It was, therefore, placed in the mother's arms, and small doses of calomel ordered in the interval.

At 7 o'clock, P. M., it was deemed necessary to operate, as all the symptoms were aggravated, attended with considerable venous congestion of the vessels of the neck and face.

Mr. Read, therefore, performed the usual operation, but was greatly embarrassed by venous hæmorrhage, which was profuse, requiring ligatures to arrest its flow, or the child would have died on the table.

When the trachea was caught by the hook the child was seized with a violent spasm, and ceased to breathe till portions of three rings were cut out, when, by placing it sitting up, and then applying stimulants to its nose, it rallied, and breathed freely through the wound. It was then placed in its mother's arms; small and repeated doses of calomel every second hour were given through the night, together with arrow-root and wine.

11 o'clock, P. M., four hours after the operation, breath-

ing reduced to a mere pant; percussion very dull over the whole chest; pulse feeble, and surface cold: appears to be dying.

Died at 8 o'clock the following morning, having only survived the operation thirteen hours. No *post mortem* examination was obtained, as the mother carried it off immediately after death.

The following case further illustrates the fatal results attendant on the shock from operation.

Case V.—Laurence M'Call, aged sixteen months, residing at Ringsend, in consequence of having attempted to swallow boiling water from the spout of a kettle, on the 20th May, 1842, was admitted into Mercer's Hospital, at 4 o'clock, p. m., one hour after the occurrence took place. At this time the symptoms were not urgent: the child was cross, whining, and unable to suck, had some cough and irritability of the stomach; no difficult breathing, or vesication about the mouth or face; ordered an emetic. At 8 o'clock, p. m., the peculiar stridulous and rapid breathing, quick pulse, congested countenance, and inclination to coma, with diminution of temperature, having set in, it was decided in full consultation that no time should be lost in having recourse to the operation, which was accordingly performed by Mr. Auchinleck, in the usual way.

There was very little hæmorrhage, and the opening into the trachea was easily effected, as it lay very superficial; there was no spasm or fit of coughing on the trachea being seized or the piece being removed; the child breathed freely through the wound; opened his eyes and appeared to be perfectly conscious, apparently looking about for his mother. It was placed in bed with hot jars under its arms and to its feet; arrow-root and wine to be given during the night, and one grain of calomel every second hour.

21st. Passed a quiet night till towards six in the morning, when he had a few stools; had several fits of coughing, which filled the wound with ropy mucus that nearly suffocated the

little patient; the breathing became hurried; pulse 160; right lung clear on percussion; left lung dull throughout, particularly under the clavicle; two leeches to be applied under the left clavicle; a blister between the shoulders; to discontinue the calomel, and substitute hydrargyrum cum cretâ, with Dover's Powder every third hour, and to continue the wine and arrow-root; the suck to be given in a spoon; the ward to be kept warm; hot jars continued as before.

2 o'clock, P. M., pulse hurried; patient greatly distressed by the mucus collecting in the wound; left lung more dull; leech-bites bleeding freely; to continue the mother's milk.

At 8 o'clock, P. M., I was summoned in a hurry to see the child, and on arrival found it dying; face livid; no pulse perceptible at wrist; surface cold; and before we could get sinapisms to the limbs or a blister to the chest, the child died, twenty-four hours after the operation.

The following case, under Mr. Palmer's care, appears to me to have had the operation performed too late to afford a hope of recovery, although this circumstance could not have been avoided. I am indebted to Mr. Butcher for the particulars.

Case VI.—Lucy Costello, aged one year and ten months, was admitted into Mercer's Hospital at half-past 8 o'clock on the morning of the 17th May, 1844, nearly asphyxiated, produced by having taken a sup of boiling water out of the spout of a kettle, the evening before, at 6 o'clock. After this the child screamed violently; some oil was given by the mother to allay the pain, which shortly after subsided, and until about 12 o'clock the same evening no unpleasant symptoms occurred.

About that hour the child began to breathe heavily, and shortly after the mucous rattle was quite perceptible in her throat, at the same time the face was pale, and the body cold. She sought the aid of an apothecary, who gave some castor oil and a little ipecacuanha; the greater part of this was rejected through the nose. In this state she continued till admission. Her extremities were cold; eyes turned up under the lids; pulse 143;

a great quantity of mucus in the throat and chest; respiration croupy.

Mr. Palmer immediately proceeded to open the trachea in the usual manner, fifteen hours after the accident. Two large veins running at either side of the median line were avoided, and the trachea laid bare. When this was done, the depth of the cavity was more than could be imagined. The sterno-mastoid being in violent action, thus bearing up the integuments at both sides of the neck: two aneurism needles were used as retractors. The trachea was seized in a hook, and a small piece including the section of two rings cut out.

Immediately when the knife sunk into the trachea, the air whizzed out forcibly, and when the bit was removed, a quantity of mucus was instantly discharged, and the child seemed absolutely charmed into life, looked immediately around her, with the greatest cheerfulness, and the countenance changed at once from the most sunken state to a calm and placid expression. Not more than a tea-spoonful of blood was lost.

As the wound looked to be a little valvular, a broad piece of sticking-plaster was placed at its inferior angle, and carried down on the abdomen, which tended completely to keep the divided parts asunder.

3 o'clock, P. M. The trachea seems loaded with mucus, and the child has relapsed into nearly the same state as before the operation. To have a grain of calomel and a quarter of a grain of ipecacuanha every fourth hour, and a blister to the chest. The child died the following morning, twenty-four hours after the operation.

A hurried *post mortem* examination was made by the resident pupil, in consequence of the friends being desirous to get the body, so he had only time to examine the lungs, which were very heavy and solid, being engorged with blood, and loaded with mucus. The larynx and trachea were not examined.

That life may be saved, even under the most unpromising and unfavourable circumstances, by the operation, is evidenced by the following.

Case VII.—Ellen Tobin, aged two years, residing at Westland-row, was admitted into Mercer's Hospital, 19th December, 1845, at 9 o'clock, A. M., in consequence of taking a sip of boiling water from the spout of a kettle the night before, at 10 o'clock. Shortly after the accident the mother applied to the hospital, and received directions to give an emetic; but as she became alarmed at her condition she conveyed her to the hospital, in a nearly asphyxiated state. I never witnessed the same amount of apparent distress experienced on each attempt at inspiration as in this instance. The cartilages of the ribs were sucked in in a most remarkable manner, leaving a great hollow at each effort made by the little patient to fill its lungs. Still, unpromising as this case appeared, even to entertain a hope that any beneficial result was likely to occur from the operation of tracheotomy, it was decided, in consultation, that the chance should be given. Accordingly I performed the usual operation. On the piece being cut out of the trachea the air instantly rushed in, the child sat up, coughed, looked about, and appeared quite revived. A large vein ran on each side of the incision; these were easily avoided, and there was not a teaspoonful of blood lost. There was no difficulty in seizing the trachea, as it lay in a very shallow wound, and the whole operation was completed in less than four minutes.

She was placed in a warm bed; small doses of calomel and James's Powder were given at intervals of three hours, and the ward was kept very warm. On the following morning she was breathing partly through the wound and partly through the mouth.

As she continued to go on favourably, on the 21st all medicines were discontinued. On the fourth day the wound was partially closed.

On the 1st January the wound had completely healed, and on the 12th she was dismissed cured.

That spasm may take place on the trachea being seized by the hook, to such an amount as nearly to asphyxiate the patient, requiring the greatest promptitude and presence of mind in the operator, the following is a good example.

Case VIII.—James Mondon, aged two years and a half, a fine, chubby-looking child, was admitted into Mercer's Hospital on the 25th June, 1847, at 3 o'clock, in consequence of having attempted to swallow some boiling water from the spout of a kettle two hours previously.

Immediately after the occurrence his mother gave him some melted butter, which vomited him well, and shortly afterwards he eat some dry biscuit.

On admission there was nothing urgent in the case; the breathing was free, and unattended with any stridulous or croupy respiration; no difficulty of deglutition; no blisters about the mouth, cheeks, or tongue; nothing remarkable about the epiglottis. A leech was applied over the first bone of the sternum; an emetic administered; the extremities and surface kept warm.

At 7 o'clock, P. M., the breathing became embarrassed and stridulous; features bloated and pale; pupils contracted; pulse 100; head drawn back; surface cold; epiglottis swollen, hard, and erect. Shortly after these symptoms presented themselves the case became more urgent by the addition of fast-approaching coma. Mr. Read, therefore, proceeded at once to operate. On the trachea being seized with the hook, and a small opening made into it, the child instantly stretched itself out at full length, fixed its features, which became highly congested, and ceased to breathe. The trachea was instantly seized again with the double hook, and the opening enlarged; this was easily done, as the tube no longer worked up and down in the wound. He was then placed suddenly in the sitting posture,

a flexible catheter passed into the trachea, and one puff of air blown in, stimulants, at the same time, being applied to the child's nose. The chest heaved, he coughed up some blood and mucus from the trachea, and looked about.

Small quantities of warm wine and water were given; he was rolled up in hot blankets, and placed in a warm bed, surrounded with hot jars.

Not two tea-spoonfuls of blood were lost during the operation. On reaction setting in he was given small doses of calomel and Dover's Powder. On the following day violent bronchitis set in; the air cells and trachea were loaded with mucus; face bloated; pulse 120, small. The body to be smeared with mercurial ointment; the powders to be continued.

Next day he died at 3 o'clock, fifty hours after he had taken the hot water.

Autopsy, sixteen hours after death.—Thorax very dull all over on percussion; on opening it the lungs did not collapse, but were very dark-coloured and firm to the touch; old fibrous adhesions about an inch long were universal in both pleural cavities, but no recent lymph was effused. Incision proved the lungs to be in the first stage of pneumonia, congested and solid, having little air in them, except in their upper lobes; they scarcely floated on being placed in water. On slitting up the trachea it was found covered with recently effused lymph as far as its bifurcation, but not amounting to the formation of false membrane. The mucous membrane under it was of a light scarlet colour, the vessels being finely injected. The artificial opening proved to be placed a little below the cross slip of the thyroid gland.

The epiglottis was erect and tumefied, and the thyro-epiglottidean folds had flakes of lymph on their surface, and infiltrated with serum, so as nearly to obliterate the opening into the larynx.

For the particulars of the following case I am indebted to

my colleague, Mr. Tagert, and as it also proves what promptitude and presence of mind will do under most unfavourable circumstances,—by the timely introduction of the catheter in such cases,—I insert an abstract of it here.

Case IX.—In the year 1844 Mr. Tagert found it necessary to perform this operation on a little child two and a half years old, while labouring under the usual symptoms after attempting to swallow the steam of hot water.

On the trachea being laid bare it was seized with a hook, when the child instantly ceased to breathe, stretching itself out; the countenance became perfectly livid, and the pulse no longer perceptible. In this state the piece was cut out of the trachea, and still no evidence of life followed. A messenger was instantly dispatched for a catheter: in the mean time the heart had ceased to vibrate. Mr. Read (who assisted Mr. Tagert in the operation), on receipt of the instrument, immediately passed it through the nose, as far as the rima, while Mr. Tagert at the same instant pressed the cricoid cartilage back on the spine; Mr. Read blew down some air through the instrument, when the child immediately breathed, coughed up a quantity of bloody mucus, and thus life was saved, but only for a few days, as he died from extensive bronchitis, and symptoms of pneumonia, on the third day after the operation.

For the particulars of the following case I am also indebted to my friend, Mr. Tagert.

Case X.—A female infant about three years old attempted to drink from a boiling coffee-pot, at about 1 o'clock, p. m., on the 15th February, 1839. It did not appear to have suffered much at the time, having played about and amused itself shortly after. In about two hours it complained of soreness about the throat: deglutition becoming very painful, she was brought to Mercer's Hospital about half past 4 o'clock, p. m. There was not much difficulty of breathing at that time. An emetic was administered. Dyspnœa soon set in and rapidly increased.

About half-past 7 o'clock, P. M., or three hours after admission, the breathing became most embarrassed, stridulous, and croupy; countenance livid; surface cold.

At 9 o'clock, P. M., Mr. Auchinleck found it necessary to perform tracheotomy; a small portion of the trachea was removed in the usual manner, and very little relief was afforded by the operation. She was put on small doses of calomel frequently repeated.

16th. Next morning respiration was most laborious, large quantities of adhesive mucus issued from the wound in the trachea; pulse rapid, and thready; the child lay in a semi-comatose state; eyes half open, but unconscious; fits of coughing most distressing; had occasional fits of collapse or sinking; was roused from these by administering small quantities of warm wine and water. A small tube was inserted into the trachea, and removed occasionally to clear away the mucus.

Died about 10 o'clock, P. M., suffocated by the copious mucous secretion, thirty-three hours from the period of having made the attempt to swallow the boiling coffee.

Mr. Tagert proceeds to remark, "whether any of the fluid got into the mouth it is difficult to say; perhaps the steam was inhaled during inspiration. The tongue, lips, and inside of the cheeks did not present any mark of injury."

An examination of the body could not be procured, the mother scarcely quitting the infant for a moment. However, the wound in the neck was enlarged and the larynx removed. The epiglottis greatly thickened, erect, and inflamed; the aryteno-epiglottidean folds thickened and œdematous; the opening into the glottis almost closed from sub-mucous effusion; the rima or chink of the glottis not engaged; no œdema here; upper part of the pharynx inflamed.

The following case I am also indebted to Mr. Tagert for, who was called on to assist Mr. Palmer; it exemplifies the inconvenience and bad consequences of carrying the incision too

low in the neck; and also the fatal results from enlarging the wound in the soft part after the trachea is opened.

Case XI.—A child between two and three years old attempted to take water from the spout of a boiling kettle in the month of August, 1846.

Four hours afterwards, in consequence of its breathing becoming embarrassed, it was conveyed to Mercer's Hospital, when, on consultation, it was considered a proper case for the operation of tracheotomy; and accordingly Mr. Palmer opened the trachea, on which being laid bare, the upper portion of the thymus gland was seen moving up and down, so as to hide the trachea at each inspiration. This portion of the gland Mr. Palmer seized with a hook, and, passing a ligature round it, cut it off above the ligature; and then opened the trachea in the usual way. But now, observing that the opening thus made was valvular, in consequence of being drawn under cover of the deep fascia and muscles covering it, with a scalpel he enlarged the wound above, when, some vessel being divided, a quantity of blood passed into the trachea, and the patient instantly died on the table.

I could relate the particulars of another case which I was called to see by an apothecary in the neighbourhood of Ranelagh, where I found it necessary to open the trachea six hours after the patient had attempted to swallow the boiling water, and in this instance the operation was perfectly successful; but as it did not come under my observation in hospital, I forego entering into particulars.

Now that many of these cases recover under antiphlogistic treatment, without having recourse to the operation of tracheotomy, is well known to every surgeon. A number of examples I might adduce to prove this; one case may suffice.

Case XII.—William Roach, aged three years and a half, residing in Windy Arbour, was admitted into Mercer's Hospital at 8 o'clock in the evening of the 8th December, 1842, in

consequence of having attempted to swallow boiling water from the spout of a kettle at 1 o'clock that day.

I saw him shortly after admission, and found him with short, stridulous, and croupy breathing; cough; difficult deglutition; face flushed, but not bloated; pulse 100; no vesication visible on the inside of the cheeks or mouth; could answer questions, but in a hoarse voice.

It appears that on receipt of the scald he cried lustily, and then slept for three hours. On his awaking, his breathing being hurried and croupy, his mother became alarmed, and hastened with him to hospital. As this case did not appear very urgent, I had an emetic administered, and two leeches applied to the upper bone of the sternum, and left directions with the resident pupil to report if he got worse.

However, the above measures gave great relief to all the symptoms, for after the action of the emetic he was enabled to drink pretty freely, and without much pain being experienced in swallowing. In the evening he was ordered a grain of calomel every third hour. The following morning he had some slight cough, which a small blister relieved, and on the next day he was dismissed cured.

This case shews the benefit derivable from emetics in these instances, in unloading the vessels and clearing the bronchial tubes of mucus. Had this effect not been produced, and the symptoms thereby relieved, the operation should have been had recourse to.

The following case fully proves the necessity of not permitting a child to be exposed to cold or the use of improper diet before the symptoms are completely combated.

Case XIII.—John D'Arcy, aged two years, was admitted into Mercer's Hospital on the 17th November, 1845, in consequence of having attempted to swallow boiling water from the spout of a kettle on the evening before, after which he screamed violently for some time, then ran about for fully four hours as if nothing had happened. About one hour after he was placed

in bed his breathing became hurried and difficult, for which his mother sought the advice of an apothecary, who gave him some medicine, but as the symptoms were not relieved she conveyed him to hospital. His breathing was then a little stridulous and hurried; face perfectly natural; pulse about 80; vesications visible on the soft palate; epiglottis a little swollen and erect; did not throw his head back; could swallow with difficulty. An emetic was instantly administered, two leeches applied to the upper bone of the sternum, and two grains of calomel given every third hour.

18th. This morning he was much better; breathing still stridulous; pulse 80; chest clear on percussion; face natural; deglutition less difficult; calls for cold water. To continue the powders at longer intervals.

19th. This morning he is so much better his mother insists on removing him from the hospital, although strongly advised not to do so.

20th. Yesterday his mother brought him home, gave him wine, and too much food: this day she brought him back again, with extensive bronchitis and laryngitis. The idea of tracheotomy is now quite out of the question, as deposition of lymph is suspected to exist in the trachea. He was bled locally and generally, blistered, calomel and tartarized antimony given, but all to no purpose, as he died the following morning.

Autopsy, fourteen hours after death.—Body plump; face swollen and livid; lungs congested, firm to the touch; no crepitation on pressure. The larynx being removed, the mucous membrane covering the epiglottis was found thickened, and covered with lymph, the rima in the same condition, and the whole canal, as far as its bifurcation, lined by false membrane.

This child would, in all probability, have recovered completely, had it not been removed from the hospital. It also proves how the symptoms can be subdued by measures which sometimes fail in other cases apparently similar; for had the usual symptoms set in shortly after admission on the first occa-

sion, the operation should have been performed; but dissection proved that, had it been had recourse to on its second admission, it would have been worse than useless, as genuine croup had set in.

The foregoing cases present many points of practical importance for the surgeon's serious consideration. In the first place, we should inquire is the operation of tracheotomy ever necessary to be performed in these cases; and, if so, what are the circumstances that call for its adoption? in the second place, do such cases ever get well without it? and, lastly, proceed to the consideration of the instruments required, the circumstances to be attended to in its performance, and the subsequent treatment to be adopted.

In all cases where boiling water has been taken, or attempted to have been taken, into the mouth, the danger at all times is imminent; for although the little patients seem to suffer comparatively very little for the first few hours, still symptoms of grave importance set in, sooner or later, which, if not combated by appropriate treatment, will either kill the patient or call for the operation of tracheotomy. The operation is, therefore, I think, imperatively called for, when the usual remedies, such as emetics, leeches, and the application of heat to the surface, &c., fail in allaying the urgent symptoms. But when the breathing becomes stridulous and croupy, or amounting to a mere pant, from spasm of the glottis, the pulse quick and small, the temperature of the body diminished, the head drawn back, face congested, eyes half open, inclination to coma, and difficult deglutition, I should, on the first accession of these symptoms, at once be inclined to operate; but when these have lasted a sufficient length of time to cause complete coma, or if bronchitis or laryngitis has set in, then, I think, it will be found useless; for when patients under such circumstances die after operation, provided it is not produced by the shock inflicted on the nervous system, it is from the accession of bronchitis, laryngitis, or pneumonia; consequently, if any

of these exist before we operate, we can entertain but small hopes of recovery.

In reply to the second proposition,—whether they ever get well without the operation being performed?—I need not dwell upon it, as we all know they do, in proof of which I have adduced one case out of many that have come under my observation. But the fact is so well known to all practitioners, I shall dismiss the further consideration of it, and proceed to our last proposition, viz., the instruments required, the circumstances to be attended to in its performance, and the subsequent treatment to be adopted. The instruments necessary to be provided with, in addition to the ordinary scalpel, scissors, forceps, and retractor, are, a trachea pipe, a gum-elastic catheter, and a small double hook; the latter I think a much more convenient instrument for laying hold of the trachea than a single one, or any other contrivance. The circumstances to be attended to in its performance are:

1st. The operator should bear in mind that his cutaneous incision be in the median line, otherwise the opening into the trachea will not correspond to it, a valvular opening being the result.

2nd. Great caution is required in avoiding the thyroid veins, which, as well as the middle thyroid artery, constantly encroach on the median line.

3rd. Great caution is required that the incision be not carried too low in the neck, thereby opening the fascia that is attached to the sternum, which helps to close the upper opening of the thorax, like a lesser diaphragm, whereby there is not only danger of wounding the vena innominata, but also great annoyance may be experienced in the subsequent steps of the operation, by the elevation and depression of the thymus gland.

4th. We should never open the trachea till we are certain that we have laid open the deep fascia that covers it, or we will surely have a valvular opening.

5th. The operator should be prepared, in case of the super-

vention of spasm, when the trachea is seized by the hook, to cut the piece out rapidly; or should the patient not breathe instantly after this has been done, the surgeon must lose no time in passing a gum-elastic catheter into the trachea and inflating the lungs.

6th. We should never enlarge the wound in the soft parts after the trachea has been opened, lest a flow of blood should pass into it, and cause the instant death of the patient.

7th. Blood may pass into the trachea the instant the opening is made into it, thereby producing violent cough, or even to such an amount as to asphyxiate the patient. In either case the elastic catheter must be had recourse to, and life may be saved.

8th. Should a lymphatic gland present itself along the course of the incision, and tend to obstruct the passage of air into the trachea, it may be removed without danger.

The subsequent treatment to be adopted is simple. Immediately after the operation, as the patient is generally in a more or less collapsed state, we should give small doses of warm wine and water, or camphor mixture; we ought also to place him in a warm bed with hot jars around him, and have a warm temperature kept up in the room.

When reaction sets in, small and repeated doses of calomel, in combination with James's Powder, ipecacuanha, or tartar emetic should be given. If diarrhœa occurs, hydragyrum cum cretâ, with Dover's Powder, should be administered; or, if this will not check it, we may try small anodyne injections. But the principal danger to be dreaded, and which is chiefly to be guarded against and combated, is that arising from bronchitis, laryngitis, or pneumonia; and I know nothing more likely to keep off their approach than inhaling a warm atmosphere, in conjunction with the use of calomel. If, however, any of these symptoms set in, they must be met by the ordinary measures used in such cases.

Art. VI.—*Contributions to Aural Surgery*, Part III.—*Inflammatory Affections of the Membrana Tympani and Middle Ear.* By W. R. Wilde, M. R. I. A., F. R. C. S., Surgeon to St. Mark's Hospital.

(*Continued from vol.* iv. *p.* 426.)

II. SUBACUTE INFLAMMATION OF THE TYMPANUM AND ITS MEMBRANES.

Besides the acute form of the disease, attended by violent pain, &c., described in my former communication, there is a description of subacute inflammation of the membrana tympani, with which I have been long familiar, and which, although perfectly painless, is equally destructive to hearing. It generally appears in persons between 15 and 30. The first symptom to which the patient's attention is directed is deafness, which has appeared rather suddenly. It may be, but is not always, accompanied by tinnitus. The nature of the disease is only to be learned by a careful inspection of the membrane, which, if we see the disease early, is always of a pink colour, of a tint somewhat paler than that of the monthly rose. Through this, dispersed in various directions, we observe in some cases a few long, tortuous vessels. The transparency and polish of the membrane are seldom much affected at first. The auditory canal does not usually exhibit signs of disease, but the ceruminous secretion is arrested. Generally speaking, there are no constitutional symptoms present, and when tinnitus is an accompaniment, it is usually of a very light character, resembling a slight buzzing or singing. If allowed to proceed unchecked, the membrane becomes thickened and remarkably opaque, from lymphy deposits, and the deafness which ensues is of a most irremedial nature. Collapse or drawing inwards of the tympanal membrane does not usually follow this form of the affection, but

ulceration, even to perforation of the membrane of the drum, is not an uncommon attendant upon it.

This disease is slow in its progress, and requires very careful watching. Cases of this nature have been, I feel convinced, repeatedly treated as "nervous deafness." I am inclined to think that it is a true myringitis, in which the inflammation is seated in the fibrous layer of the membrane. In this disease mercury is just as necessary as in that already detailed; it should, however, be given after a different fashion: to be effectual, it must be slowly introduced into the system, so as to produce a steady and gradual effect. The mouth should be kept sore until there is a decided improvement both in the vascularity and in the hearing, or until all hope of restoration has been abandoned, or other circumstances induce us to relinquish this mode of treatment. After the constitution has been fully affected by the mineral, the bichloride, given in doses from the sixteenth to the eighth of a grain, dissolved in proof spirits, and taken in half an ounce of the cold infusion of bark, and a scruple or half a drachm of Huxham's tincture, three times a day, will be found highly efficacious. The preparations of iodine are also, in the advanced stage of the disease, worthy of trial; but I do not think that the preparations and combinations of iron produce in aural inflammations the same benefit which they do in constitutions labouring under ophthalmic affections of a like character.

Counter-irritation by means of tartar emetic ointment(*a*), or the continued application of Albespeyre's paper, keeping up a discharge from the integuments over the mastoid process,

(*a*) Great care should be taken in applying this ointment behind the ears, as it is very apt to produce large unhealthy-looking pustules, not unlike the disease we know as "burned holes" (*pemphigus gangrenosus*), particularly if allowed to spread over the back of the auricle. To make it act more speedily it may be mixed with a little powdered white sugar, and spread upon a piece of lint, which, after the part has been rubbed with the ointment, is to be applied in the form of a plaster, and retained till the pustules are produced.

will hasten the cure. Should the constitution require it, change of air, removal to the sea, and generous living, &c., must be had recourse to.

To relieve tinnitus aurium, after the inflammatory action has been subdued, or the original disease which produced it has subsided, and particularly in cases where we find this symptom present without any apparent lesion of the parts which we are able to inspect, I have latterly found the preparations of the *Arnica montana* of decided benefit; indeed it is the only medicine with which I am acquainted that seems to possess a specific power over this annoying and usually most intractable complaint. The preparation I find most efficacious is the tincture both of the flowers and leaves, of which the patient should commence by taking fifteen drops in a table-spoonful of the infusion of Arnica, and a little of some cordial tincture three times a day. After a few days the dose should be increased one or two drops daily, till it reaches thirty, or even more, unless headach or giddiness be produced, when we should at once lessen the dose, or omit the medicine altogether for a short time (*a*). The state of the bowels should be carefully attended to during the administration of this drug.

So long as any vascularity or recent deposit exists in the membrana tympani, notwithstanding manifest improvement of the hearing, we should not desist from employing means to remove it, as these cases are of a most insidious and protracted character. When ulceration exists, we should touch the part

(*a*) The following is the formula for the tincture prepared for me by Messrs. Bewley and Evans. One ounce and a half of the *flowers* to a pint of rectified spirit of wine; macerate for fourteen days and strain; or, for the tincture of the *leaves*, the same quantity infused for a similar period in proof spirits. In prescribing these I usually order them in equal proportions.

Dr. Neligan says: "This tincture may be readily prepared by percolation, having previously macerated the flowers with a little of the spirit for twenty-four hours; or it may be prepared with the cut and bruised root in the proportion of ℥ii. of the root to Oj. of rectified spirit. Dose, f. ʒ ss. to f. ʒii."—*Medicines and their Uses.* Second Edition.

daily with a solution of lunar caustic, applied with a fine brush. The same mode of treatment is applicable to perforation of the membrane, and I have latterly been astonished at the number of cases in which, under this treatment, or touching the edge of the perforation with a fine point of the solid nitrate of silver, applied upon a *porte-caustique*, together with proper constitutional treatment, these apertures have healed up. After an extensive trial of various other escharotics, such as the nitrate of mercury, and the sulphate and nitrate of copper, I find the preparations of silver the best.

In all the inflammations of the middle and external ear, the secretion of cerumen is arrested, and it is long after the disease has been relieved, that the ceruminous glands resume their healthy functions, the auditory passage remaining dry and its lining scaly: or the wax which is produced being insufficient in quantity, of a very dark colour, and soon becoming hard and inspissated, &c. This deficiency of cerumen, which is but a symptom, is often set down as a disease, and various applications of ox-gall, creasote, &c., have been recommended to restore it. I find, however, that nothing produces a healthy action in the parts so soon, while, at the same time, it immediately supplies the best artificial succedaneum, as the *unguentum citrinum fuscum*, the soft brown citrine ointment, applied to the auditory passage in a melted state with a soft brush(*a*).

(*a*) There is no other medicine in the whole materia medica so frequently prescribed by the practitioner, which presents the same differences, both in appearance and effects, as citrine ointment. According to the ordinary method of preparing it, as directed in any of the Pharmacopœias of the three kingdoms, it is impossible to procure it alike in any four different establishments. It is found of all shades of colour,—straw-coloured, grey, green, yellow, orange,—and of every degree of consistence, dry and hard, or soft and pasty. Many apothecaries in Dublin do not adhere to the pharmacopœial formula, but make it up according to a form of their own; some use fresh butter instead of lard and oil, and others different kinds of oil, as from habit or experience they find best. Some of these, however, are liable to the objections already stated. Moreover, if mixed with almond oil, as in diluting it into an eye-salve, although it looks yellow for a day or two, it soon becomes

Case IV.—*Subacute Tympanitis with Paralysis of the Portio Dura.*

Patrick Rooney, aged 35, suffered from typhus fever about fourteen years ago, during which he had violent pain in his left ear, accompanied by a discharge which has continued ever since. He is quite deaf upon this side, and upon examination the membrana tympani is found to be perforated at its anterior portion, and the whole membrane, auditory passage, and middle ear as far as can be seen through the aperture, are of a bright florid red; the ossicula, however, remain *in situ*. The hearing in his right ear remained perfect until the beginning of May last, when he began to perceive a deafness upon that side, which after a few days was accompanied by a most distressing noise resembling "the escape of steam;" he had also a rolling noise in his head, but no pain in either head or ear. He applied for

green, and gets a very unpleasant smell, no matter whether covered up or not, and in this state it is often very irritating. On explaining my difficulties, some two or three years ago, to Mr. Donovan, he procured me a citrine ointment of a very dark orange or brown colour, soft, perfectly and equally smooth, and which does not alter in any way by keeping, by exposure to light, by mixing with oils, or even by being gently heated to the point of fluidity: and it never acquires an acid smell. Its therapeutic effects I have had long experience of, and they are decidedly superior to those of the ointment in common use;—Mr. Donovan has not made known its constituents, nor its mode of preparation. Mr. Nicholls has made for me a citrine ointment precisely similar in colour, smell, consistence, and effects. He informs me that he has used rape oil instead of olive oil, and has never let the heat employed during the preparation exceed 200°. Mr. John Evans has employed cod-liver oil, and also seal oil, and the preparations thus produced are exceedingly elegant and useful ones. Messrs. Bewley have obtained for me a brown citrine ointment somewhat like those already mentioned, and they inform me that it is by using only the very purest olive oil. I find this ointment a decided improvement on the old preparation, and its composition should be investigated by those engaged in the preparation of medicines and pharmacopœias. When about to be used, it should be melted to the consistence of cream by placing the vessel containing it in hot water. It forms an admirable application in ophthalmia tarsi.

medical advice, and had "drops" of an irritating nature poured into the meatus. Not having derived benefit from these, he applied at St. Mark's Hospital on the 29th of May, 1847. The noise and deafness were as already described; in addition he suffered from headach and pain in his face.

The right side of the face was then completely paralyzed, presenting the usual appearance of fulness and smoothness; the mouth drawn to the left side, the eye staring from inability to close the lids, the tears flowing over upon the cheek, the nostril collapsed, the colour of the skin somewhat heightened, and its temperature considerably raised beyond that of the opposite side. The auditory canal was dry and red; the tympanal membrane had completely lost its polish, and presented an uniform pink appearance, not unlike blotting-paper. He had no pain anywhere around or about the ear, nor could pain or soreness be produced upon making pressure in any of the usual situations. He was able to inflate the tympanum; but could not hear the watch placed to the ear or any part of the head, and could with great difficulty distinguish the voice.

He was slightly mercurialized by the use of the hydrargyrum cum cretâ with cicuta; leeches were applied several times round the meatus, and small blisters over the mastoid process. As soon as his mouth became sore (in about ten days), the hearing returned, so that he could hear ordinary conversation very well; the vascularity of the membrane lessened considerably, and the noise decreased. On the 15th of June the paralysis had quite disappeared; he was then obliged to discontinue his attendance at the hospital, but was given some of the iodine and hydriodate of potash solution to take occasionally. Wishing to learn the result of this case, I sent for the patient, and again examined him upon the 10th of September last(*a*). He had

(*a*) I would strongly recommend those engaged in hospital or dispensary practice in a large city, to make a note of the address of any patient whose case is interesting, in order that they may be able to learn the final result of such.

no return of the paralysis; the hearing remained much the same; the meatus still red; the membrana tympani, over the head and handle of the malleus, was bright red; the rest of the membrane, with the exception of one clear spot in front of the point of the malleus, presented a dull, pearly hue; there were no folds observable in it, but a very opaque rim, like a broad arcus senilis, round its lower attachment.

The paralysis in this case seemed to have been caused by the inflammation in the ear extending to the portio dura. Now may not many of those cases of facial paralysis, so frequently met with, and some of which are apparently the result of cold, have been produced by a like affection? The state of the drum in all such cases should be accurately investigated.

Case V.—*Sub-acute Myringitis; Mercurial Treatment; Recovery.*

The following case affords a good example of the subacute form of the disease, of the inattention paid to the early symptoms of deafness by practitioners in general, and the efficacy of antiphlogistic treatment. As the subject of this case, Mr. S., aged 19, is a young gentleman of very great intelligence, I give the history of his case, as far as possible, in the words of the narrative with which he has furnished me. "About the year 1836 I felt symptoms of deafness in both my ears for the first time, but on the application of blisters these symptoms passed away. From being but a child at the time, I have an imperfect recollection of the peculiar symptoms of my case. Again, in 1840, I became quite deaf in my right ear: this I mentioned to our family physician, but for some time he treated it as a joke, telling me merely that I was idle and wished for some holidays; however, on my frequently asserting that I really *was* deaf, he directed me to syringe my ear night and morning, and afterwards he dropped some liquid into it which he prescribed for me, but he did not make any particular examination of my ear. I continued to follow his advice for some weeks, but without any beneficial effect. I was then advised to get some

rusty bacon, cut it into small shreds, and put one, morning and evening into my ear,—but with no better success(*a*). At last I applied a blister behind my ear, and kept it open for six months. This treatment, which may, and very probably would, as experience has since shewn me, have been successful, had it been resorted to in the first instance, was then of no avail. On two subsequent occasions, about Christmas, 1841, and July, 1842, I had an ear-ache in that ear, and the only application which gave me relief was dropping warm laudanum into it(*b*). At the close of September, 1845, I felt my left ear one morning as if it were stopped, and perceived a buzzing sound in it, such as one feels on applying a sea-shell to it. This noise was increased at night when I lay in bed; it then resembled a constant, loud hissing. I became very deaf, and my difficulty of hearing increased daily ; I also experienced an uneasy sensation, and a feeling of stuffing, in this ear, but no pain."

On the 21st of the November following I first saw this young gentleman. I found, in addition to the symptoms already described, a bright pink hue diffused over the left tympanal membrane, which, however, had not lost its polish, nor become opaque. He was with difficulty able to inflate the drum, and when he did so, the stream of air caused a slight squeeling and a mucous gurgling in the middle ear. The external meatus was dry, devoid of cerumen, and somewhat redder than natural. The throat, however, was normal. It was evidently a case of subacute inflammation of the membrana

(*a*) This is a very popular remedy in Ireland, and is frequently prescribed by medical practitioners. In cases of deafness, unaccompanied by inflammation, and solely the result of a deficiency of cerumen (very rare cases, by the way) it is innoxious, and may be effectual, but in no other case that I am aware of is it at all applicable.

(*b*) Laudanum dropped into the ear is one of the most popular remedies for ear-ache, and in many instances it certainly affords relief. We do not object to its application as a means of lessening pain, but we do as a remedial agent, while the *cause* of the pain is uninvestigated, and not treated according to the established rules for lessening inflammation, &c.

tympani, of the mucous membrane lining the cavity of the drum, and the Eustachian tube: with mucous engorgement of the middle ear. Upon the right side the membrana tympani was found thickened and opaque, and two or three large, red vessels spread over its surface, but on this side the air passed up with facility. Six leeches were immediately applied to the left ear, three round the meatus and three in front of the tragus, and warm stupes and fomentations prescribed. Upon the 29th his symptoms remained unabated and the appearances unaltered, so I immediately put him on the use of mercury, at the same time that a repetition of the leeches round the meatus, and the application of blisters over the mastoid process, was had recourse to. As soon as the mouth became slightly affected I observed that the vascularity of the right ear,—the one originally affected,—was very much lessened, and I then recommended the application of leeches and blisters to that also, and had the satisfaction to find that the hearing began to improve gradually on this as well as the left side.

As Mr. S. improved daily the mercury was omitted, and he commenced the use of bark and hydriodate of potash. Towards the end of December he was so much improved that I discontinued my attendance, and I lost sight of him for a short time. In the beginning of January, however, he again applied to me: worse than ever. The weather had been remarkably damp and unfavourable; he was much exposed to its influence, and had caught cold, which, to use his own expression, had "pitched in his ears." He was then so deaf that he could with great difficulty understand what was said to him, although addressed in a distinct and loud voice. The vascularity had returned in the left, and partially in the right ear, and the mucous engorgement of the tympanal cavities was more manifest. The same course had to be pursued as on the former occasion; he was confined to the house for a month, and kept under the gentle influence of mercury for the last three weeks of that time. I desired him to try occasionally to press the air into the drums,

particularly when blowing the nose; and as the inflammatory condition subsided he was enabled to do this with greater facility. Each time the air passed his hearing was improved. At the end of a month the mercury was discontinued and the leeching given up. Small blisters were kept open behind the ears, and the use of bark and hydriodate of potash was persisted in for some weeks longer. I examined this gentleman in November last, and found that all trace of disease had been removed from the left ear, and that the tympanal membrane of the right was much thinner, and much less vascular and opaque, than when I first saw him in 1845. His hearing is perfect upon the left side, and very much improved on the right, the hearing distance being increased on that side from three to fourteen inches.

In the foregoing case we have a good example in the right ear (which, when I first saw it, was in the condition of chronic inflammation, to be described in the next section) of the effects of neglect, and also of the efficacy of the antiphlogistic treatment, not only in the removal of recent disease, but in the improvement of an affection of several years' standing.

I could enumerate several other well-marked cases of this disease, were it necessary, all presenting the same appearances, and cured by the same means, but in very few has treatment been attended with the same happy results in the ear previously affected as in this case. Generally only one ear is affected at a time, but sooner or later the other usually becomes engaged. I feel convinced that many cases of incurable deafness have arisen from this disease.

III. CHRONIC MYRINGITIS, WITH OR WITHOUT INFLAMMATION OF THE TYMPANUM.

By referring to the table of aural diseases published in the former part of this Essay (vol. iv. page 392), it will be seen that this is a very frequent cause of deafness, eighty-two cases having been recorded out of 709, or nearly one in nine of the whole. Indeed, I am inclined to think that it is even of more frequent occurrence; as although many cases present them-

selves as such in the beginning of the deafness, the appearances of chronic inflammation of the drum are to be found as the sequelæ of nearly all the other forms of inflammation, in the same way that we find chronic ophthalmia so frequent a consequence of the various acute forms of inflammation of the eye. This disease presents under two forms; the first, a perfectly painless deafness; the other attended by paroxysms of violent pain, coming on at intervals, between which the patient is perfectly free from all uneasiness. The latter is much more common among females from 15 to 30, and is at times accompanied by irregularities of the uterine functions. The appearance of the membrana tympani is too peculiar to be mistaken. It presents a general thickening and opacity, particularly of its lower portion, besides which there is almost invariably a number of spots, about the size of pin-heads, of greater density than the rest, and of a pearly lustre, studded over the surface of the membrane. In many cases it presents the appearance of crumpled parchment. During the quiescent periods, we only remark a few straggling vessels, carrying red blood, spreading over the surface of the membrane, and, for the most part, coursing from above downwards, parallel with the handle of the hammer. Upon any provocation, however, such as cold, or other exciting causes, the membrane will, in a few hours, and often without any increase of pain, become of an uniform dark red colour, precisely like *pannus* of the cornea, a disease of which it is the manifest analogue. The greater the amount of thickening and opacity, the less will be the quantity of vascularity and redness which the membrane is capable of assuming, as we perceive in cases of dense opacity of the cornea, owing, no doubt, to the greater quantity of deposit obstructing the flow of red blood, by diminishing, and, perhaps, also obliterating the caliber of the vessels.

Cases of this kind are often of many years' standing, and many have, I am convinced, been treated as instances of "nervous deafness." The following is no imaginary case, but one of constant occurrence.

A lady, aged between 30 and 40, consults a practitioner in aural surgery. She is very deaf, speaks in a loud, inharmonious voice, and has suffered from noise in her ears, of all descriptions, for several years. She usually prefaces the detail of her symptoms (which is generally very long and verbose) by stating that she does not think much can be done for her, for that she is labouring under *nervous deafness*, and is, therefore, incurable. She has a great objection either to be questioned or to have her ears examined until she has made a full statement of her case ; and as she has had a great variety of opinions, and has used all manner of remedies, she is tediously accurate in her account. She states that she has been deaf from a very early period; that at first her deafness was attributed to inattention, and endeavoured to be remedied by the means thought most advisable by her guardians and governesses ; that, her deafness increasing, she was brought, when about ten or twelve years of age, to an eminent practitioner, who, after a few casual inquiries, told her friends not to mind it, for that she would certainly grow out of it as she grew up, and that probably all her deafness would disappear about the period of puberty ; but that she might rub *eau de Cologne* on the jaw occasionally ! With the exception of sea-bathing, and means calculated to improve the state of her general health, no other remedies were tried, and no other advice sought for two or three years; when, not finding the hearing improved, but gradually becoming worse, and the tinnitus increasing as she grew up, a special aurist was consulted, who stated the disease to be entirely local, and curable by local remedies alone. During the next few years various means were had recourse to ; catheterism of the Eustachian tube was employed for several months, the tympanum constantly washed out, and various liquids and gases injected into it, but without effect. Counter-irritation was next employed, with issues in the arm and setons in the neck, and a long and fair trial given to their powers. It was next proposed to remove the tonsils,—and in several such cases

they *have been* removed, or, at least, portions of them. Still the disease progressed. Drops, oils, and liniments, some of the most caustic nature, were without mercy, and without discrimination, poured into the external meatus, by those who

> " Stole
> With juice of cursed hebenon in a vial,
> And in the porches of *her* ears did pour
> The leperous distilment."

Broken down in health, wearied by the variety of opinions and the multiplicity of applications, an eminent physician was then consulted, who, having heard the history of the case, advised the cessation of all local remedies, and recommended tonics and antispasmodics, together with shower-baths, change of air, and sea-bathing: stating at the same time that the disease was entirely constitutional, and of a *nervous* character. And certainly by this time, from hope deferred (for many specious promises of cure had been made), from the increase of the tinnitus, and from the effects of the long and severe treatment, the patient had become remarkably nervous and irritable, brooding over her malady, and rendered unhappy and discontented by being unable to take part in any general conversation.

Some years now passed without her doing anything; she had not become much worse, but she certainly had not improved. Owing to some new theory being started, at the solicitation of friends who had been relieved of some curable form of deafness, or from the celebrity of some particular practitioner, she was again induced to seek relief; and having arrived at the metropolis, she took the round of the doctors and aurists. Some proposed perforation of the drum, others recommended travel; the honest prescribed nothing; the quack proffered his panacea, or offered to sell his peculiar acoustic instrument, and backed the recommendation of its merits by the sign manual of some of the judges of the land(*a*). The homœo-

(*a*) In a window in the Strand, not far from Somerset House, may be seen, framed and glazed, a certificate from one of the Chief Justices of Eng-

pathists and hydropathists were each consulted, and the merits of their systems tested; the spas of England and the Badens of Germany were visited, and their efficacies tried. Electricity, galvanism, and electro-magnetism, were also had recourse to, but in vain. The opinions of those whom she had consulted were as various as the remedies they employed: but the greater number believed it to be a constitutional or nervous affection. Latterly she had been content to look out for "cures" among the newspaper advertisements, and of these she possessed a large number in her portfolio.

Of such cases, scarcely differing in a shade, I possess the notes of several. In many of these the following may be gleaned upon a careful examination. The membrana tympani will be found thickened, opaque, and slightly vascular, and sometimes very much collapsed or drawn inward towards the inner wall of the tympanum, so that the handle of the hammer forms a manifest projection. The membrane has also lost its polish and become of a dull pearl colour. On questioning the patient closely, it is acknowledged that constant attacks of *earache* were suffered several years previously, particularly in winter, and that such attacks were often preceded or accompanied by stuffing in the nose, and symptoms of catarrh, and were generally induced by cold, to avoid which the head was usually kept warmly muffled during such seasons.

In such a case our art at present does not offer much hope. The whole train of symptoms are evidently the result of slow chronic inflammation, affecting, in all probability, the lining of the cavity, as well as the membrane of the drum. The only means which can with safety be recommended at this period is the application of a solution of lunar caustic, applied with a camel's hair brush, every third or fourth day, upon the surface of the opaque membrane, while it is fully exposed to view, and should there be much vascularity present, the application

land, lauding, and recommending to all whom it may concern, a particular form of ear trumpet!

of a few leeches as far in as possible round the meatus, at least twice a week. In a few cases the Arnica will assist to remove the tinnitus; but it is not so efficacious in this as in more recent forms of the affection.

In the cases of periodic pain, with a higher degree and more generally diffused vascularity, the application of leeches, applied every second or third day, will be found most efficacious; at the same time that the patient should be brought under the gentle influence of mercury, and kept so for at least a month. Under such treatment, if the case is not of too long standing, the hearing will often be restored, and all the symptoms of pain and tinnitus may be removed. As the symptoms improve, the membrane will clear generally, but in most cases spots of opacity remain indelible. In applying the solution of nitrate of silver with a fine brush, considerable caution and dexterity is required, as the membrane will sometimes present a small perforation the next day if it has been rubbed too hard; and although I have always seen such perforations heal readily, it is an accident which should be avoided. By this application scales of membrane peel off the surface of the part, and leave it thinner and more transparent than before.

There is a form of deafness with which I have been long familiar, which may be the result of some form of inflammation in the membrane of the drum. In such cases, upon bringing the external membrane into view, we do not observe any general thickening or opacity of it, or any apparent alteration of its texture, but a crescent-shaped opacity, about a line broad and three lines long, of a yellow colour, occupies the lower and usually the back portion of the membrane, with a tolerably defined edge, and rather rough upon its surface, closely resembling the atheromatous deposits which occur in the coats of arteries. It is quite gritty, and generally more insensible than the rest of the membrane. It differs from the ordinary opacity, the effect of inflammation, in the surrounding membrane being apparently free from disease, in its almost invariable seat, its

yellowish colour and well defined edge, and in its having a portion of unaffected membrane between it and the bony attachment of the membrana tympani; whereas, as I have already remarked, the opacity which results from the ordinary form of inflammation, generally increases in density around its osseo-cartilaginous attachment. By a very slow and gradual process this disease spreads over the greater portion of the membrane, and produces permanent deafness. I am not aware of any remedy for it.

In some instances I have observed a manifest granular state of the membrane, not unlike the surface of a half ripe raspberry, the intervening portions between the reddish elevations being thickened and opaque, but unattended by discharge. In these cases I have procured an uniform thinning and clearing of the membrane, by the occasional application of a fine point of nitrate of silver; but this requires very great care, and should be persevered in for a great length of time, at least two months; it should, if possible, be applied so lightly as not to induce a discharge. Many of those cases are the result of long continued otorrhœa, but which, having healed, has left the membrane in this condition. It must be borne in mind that I am not now describing that form of chronic inflammation which is the ordinary attendant on otorrhœa, and which is the affection to which writers have given the name of "chronic inflammation of the membrana tympani." This disease, which I have been describing, may be the result of any form of inflammation, specific or otherwise.

In cases of permanent thickening and opacity of the membrana tympani, which have resisted all efforts at absorption and thinning, are we justified in performing perforation? I believe in very few cases indeed will it be found efficacious, because the opacity which we *do* see is but a portion of the general thickening and disorganization of the investing membrane of the middle ear, perhaps that of the labyrinth also, which we do *not* see. It may, however, be tried without injury in some

cases, but it requires very great caution and dexterity indeed in its performance; and, as irreparable mischief has at times proceeded from its being done in a rough or clumsy manner, I beg to offer a few observations on the safest method of performing the operation of perforation. I wholly discard all the instruments in the shape of punches, trocars, and complicated apparatuses for the removal of a portion of the membrane, of which several are described as those of Fabrizi, Himly, and others, and figured in works on aural surgery. First, because they all occupy so much space within the speculum that it is not possible, when they are introduced, to see accurately the point of the membrane which they are pressing upon, nor how much of it they are cutting; secondly, by our not seeing accurately the surface on which we are working, it is scarcely possible to avoid injuring the malleus or the chorda tympani, or wounding the inner wall of the tympanum; and, thirdly, because those with corkscrew points, which fix the membrane while the revolving punch cuts out the piece, are not only exceedingly painful, but dangerous, inasmuch as the slightest motion of the head during the operation would produce a degree of violence which might be at once destructive to this delicate membrane.

Having brought the membrane fairly within view, under bright, direct sun-light, I introduce this small, sickle-shaped

knife, with a double-cutting edge, and here figured of the natural size in the blade, but with the shaft and handle about two inches longer; and having made the patient inflate the tympanum, so as to make the membrane tense, and pressed outward, I gently introduce the point of the knife into its lower, thin, vibrating portion, and, drawing it downwards and forwards, make a simple incision of the membrane, about a line and a half in length. So simple is this, and so little pain does it give, that the patient has often been unconscious of its performance until made aware of its completion by the air rushing out through the aperture. In about a minute a slight oozing of blood takes

place from the edges of the aperture, like that which follows a wound of the sclerotic with an ordinary broad cataract needle, and if left in this condition it would soon heal up; therefore, a very fine probe, fixed in a handle, and slightly pointed with nitrate of silver by being immersed in the caustic when heated to fluidity, should be immediately passed down into the perforation, the edges of which are thereby cauterized and prevented adhering; and this latter process should be repeated from time to time, as often as the wound shews an inclination to heal, and until we establish a sufficiently large elliptical opening(*a*).

IV. STRUMOUS INFLAMMATION.

This is a frequent affection in young persons, and, I believe, a very constant cause of deafness in after life. Its subjects are always from three or four years of age to 15 or 16. It

(*a*) In the month of March, 1846, Dr. Butcher, of this city, read a paper before the Surgical Society of Ireland, on the subject of Perforation of the Membrana Tympani, with a view of shewing the ill consequences resulting from the performance of that operation. He related the cases of two young persons, a man and a woman, in both of whom it would appear that death ensued from puncturing the membrana tympani. Where fatal consequences are said to result from an operation which heretofore has proved, to say the least of it, innoxious, it is of very great importance that we should inquire into all the circumstances attending these cases, and the mode of performing the operation. The first instance was that of a young woman, deaf in both ears for four years, the only history of whose case is, that prior to this period she got a severe cold, with a swelling of the glands of the neck; but what was the cause of her deafness, how it arose, what was the condition of the membrana tympani, why the operation was performed, in what manner, by whom, or with what instrument, we are not informed; all we know is (I quote from Ranking's Abstract), that "catheterism of the Eustachian tube was performed and said to fail; hence it was agreed upon that the membrane of the tympanum should be pierced, a small piece being drilled out of the membrane of the right side;" but we are not told any other circumstances attending the operation, nor who witnessed it. Pain and other evidences of inflammation in the ear ensued, and profuse discharge took place, but what the condition of the ear was we know not. At the end of four months she died, with symptoms of diseased brain; and upon examination it was found that the dura mater covering the petrous portion of the temporal bone was roughened

chiefly attacks the light-haired, fair-skined, blue-eyed, and those who exhibit well marked evidences of a scrofulous constitution. Its first symptom is that of deafness, generally attributed to inattention: scarcely a fortnight passes that I do not see a boy or a girl, from ten to fifteen years of age, from some of the public schools, who, having been deaf for the two or three months previous, had been constantly reprimanded for inattention.

Upon examination, however, the tympanal membrane will be found of an uniform pinkish hue, but without either thickening or opacity, at least in the early stages; the auditory passage is dry, but seldom red. There is generally mucous engorgement of the cavity of the tympanum, with thickening

and softened in its texture, particularly near the internal auditory foramen. The membrana tympani was *entirely destroyed* and the lining membrane of the tympanum thickened and villous. Now, while we are totally in the dark as to what the condition of this case was originally, it is manifest that some great violence must have been done to the drum of the ear in the performance of the operation.

The second case is equally defective as to the cause of deafness or the appearance of the ear, although the *post mortem* examination was most interesting; all my friend, Dr. Butcher, states, is, that the man was deaf for twelve months previously, and that he then applied to a surgeon, and had his tympanum pierced, but why, or whether with a gimlet or a punch, a trochar or a probe, we are not informed. At first the hearing was improved, but then relapsed; after some time head symptoms set in, and the man died in the course of six weeks. Upon dissection, evident traces of inflammation of the brain and its membranes were discovered; the dura mater in particular, covering the auditory portion of the temporal bone, was rough and thickened, and a small abscess was discovered in the anterior globe of the brain, upon the same side on which the perforation was said to be performed. In this case, however, the original cause of the deafness, namely, a small tumour about the size of a bean, lying on the auditory portion of the seventh pair of nerves, was discovered. This was evidently a case in which the operation never should have been resorted to. Dr. Butcher deserves much credit for making those cases public, but it is much to be regretted that the statement of the surgeon who performed the operation was not obtained, nor the appearances of the ear, both before and after the operation, described.

and increased redness of the faucial mucous membrane,—a condition which, there can be little doubt, extends through the lining of the Eustachian tube into the middle ear. Enlargement of the tonsils is a very frequent accompaniment; and glandular swellings about the neck not an uncommon appearance in such cases. It is, generally speaking, a painless disease, and but seldom accompanied by tinnitus in the first instance; occasional crackling sensations, gurglings, and sometimes loud reports, are felt in the ear by patients themselves. Catarrh, stuffing in the nose, and great liability to cold in the head, are not unusual symptoms, or rather are attendants; there is no pain on pressure in or about the ear, the throat, the mouth, or the Eustachian tube. Strumous affections of the eyes are not an unfrequent complication, and these, particularly corneitis, which it very much resembles, and also strumous ophthalmia, sometimes alternate with the affections of the ear. The amount of deafness varies from a hearing distance of eight or ten inches with a watch, to total inability to hear a watch applied to any part of the head, or held between the teeth, or even to hear what is said in a loud and distinct voice; and, generally speaking, the amount of redness and vascularity presented in the membrane of the drum is in the ratio of the amount of deafness; but the latter is very variable, and would in many instances appear to be influenced by the state of the atmosphere, being greatest in damp, moist weather. In some cases the redness assumes a dark, damask rose colour, and then we may generally rest satisfied that the entire of the middle ear is engaged. Simple mucous discharge occurs occasionally, and otorrhœa succeeds in the more aggravated cases, as the disease advances, but it need not present at any period of the affection. The constitution is generally below the standard of health; the patient is usually pale, languid, and inactive, with, perhaps, slight loss of appetite, and some dryness of the skin.

The treatment in this disease should be chiefly directed to improve the condition of the constitution, and I know nothing

better for effecting this object than the use of bark in its various preparations, conjoined with iodide or bromide of potassium, and, when the inflammation is of a more active character, the chloride of mercury. In the advanced stages, and where there is much constitutional taint evident, with enlargement of the cervical glands, &c., the oleum jecoris will be found most effectual; but whichever of these are employed, it should be persisted in for a considerable length of time. This is a slow and tedious disease, lasting, even in the most favourable cases, for months, and is liable to relapse, and return again and again. Such patients should, therefore, be carefully watched, and their ears examined at least once a week, while any trace of inflammation remains. A dry, pure, country air will always be found beneficial, and perhaps I should add, a residence by the sea-shore in summer; but, as far as my experience extends, I have always found bathing in the open sea injurious. The warm bath occasionally, appears to be of use. As in cases of strumous ophthalmia, so in scrofulous myringitis, a leech or two may be required occasionally, although depletion is not generally indicated.

As the tongue is usually white and clammy, and the dejections often vitiated, small doses of chalk and mercury, combined with rhubarb and columba, given as alteratives every second or third night, will assist our other means. The diet should be light and highly nutritious, while all acid fruits, pickles, and ill-boiled or stale vegetables should be avoided. Constant open air exercise during the fine part of the day is very necessary; and when the weather is at all harsh, cold, or damp, a light covering should be worn over the ears, or small bits of cotton laid in the concha; but in the house, or in warm weather, these precautions are unnecessary; neither do I believe it at all efficacious to keep the head warmer than under ordinary circumstances.

Locally, counter-irritation will be found most effectual, and I find the vesicating liniments more efficacious in producing

the desired effect than the ordinary blistering. As such, the strong tincture of iodine, with acetum lyttæ, or croton oil and acetic acid conjoined with spirit of turpentine, oil of rosemary, and soap liniment, form very useful applications. The liniment should be rubbed over the mastoid process, and lower down, as far as the angle of the jaw, once or twice a day, until a slight vesicular rash is produced, when its use should be discontinued until the redness has disappeared, and then it should be reapplied as before. This counter-irritation should be kept up for a couple of months at least, varying the application as the parts become accustomed to any particular substance. Whatever substance is used, great care should be taken that it does not spread over the back of the auricle, which is very likely to become inflamed and greatly swollen by it; to prevent this a small fold of linen should be applied between the auricle and the mastoid process after each application. Should pain be experienced on pressing the tragus backwards with the finger, a single leech should be applied either on that spot or within the circle of the meatus, but, generally speaking, local depletion, as I have already stated, is less indicated in this than in any of the other inflammations of the drum or its membranes.

This is one of the diseases in which catheterism of the Eustachian tube is sometimes necessary, but, I believe, not so often as is generally resorted to. When the patient himself can readily pass a stream of air into the drum, by making a forced expiration, and at the same time holding the mouth and nose, whilst we apply our ear, or a stethoscope, to his external ear, so that we can distinctly perceive the full and natural inflation of the membrane, the introduction of a catheter, and the pressure of a stream of cold air, I believe to be not only unnecessary, but injurious. In cases, however, where mucus has collected in the cavity of the tympanum, catheterism should be resorted to occasionally, and even warm water, or some bland fluid, thrown up by means of a syringe, although I have my doubts as to the quantity of any fluid which can be thus driven

into the tympanum, in order to wash out mucus, pus, blood, or other extraneous substances. I am aware that in this opinion I differ from many distinguished authorities, and particularly from my friend, Mr. Pilcher, but it is, nevertheless, the result of considerable experience in the management of such cases. As I do not believe that the enlarged tonsils which often accompany this disease (as they do other strumous affections) are the *cause* of the deafness and the inflammation manifest in the drum and its membranes, I cannot recommend their removal, as has been proposed, and, I believe, acted on by others; but the application of a strong solution of a nitrate of silver to the back of the throat and fauces, and particularly towards the mouth of the Eustachian tube, by means of a piece of lint attached to the end of an aneurism needle, and applied as far up as possible behind the pillars of the soft palate, will be attended with beneficial results ; and the use of astringent gargles should be persevered in during the continuance of the throat affection. If otorrhœa ensues, it is to be treated as I have recommended in my former essay upon that subject.

Gout may occasionally attack the tympanal membrane, but I have never seen a case of it myself; instances have been recorded of its exhibiting itself in the auricle. It is stated that gonorrhœa appears sometimes in the external auditory canal, but we still want careful examination and accurate observation to establish these cases.

V. SYPHILITIC INFLAMMATION.

Although practitioners who treat syphilitic diseases upon a large scale appear to be aware of the fact that venereal occasionally causes deafness, I cannot find any authority which has noticed the disease I am about to describe. The deafness which sometimes accompanies the secondary form of syphilis is generally believed to be caused by inflammation and ulceration extending from the throat through the Eustachian trumpet into the middle ear; such may, under certain circumstances, no

doubt, occur, and produce destructive inflammation and suppuration in this cavity, although I have never met with such a case myself, nor have I seen a well authenticated instance of it recorded. The English writers upon aural diseases have completely omitted syphilitic affections of the ear, as have also Kramer, Schmalz, and most of the continental writers, with the exception of Lincke. Martell Frank, the last writer of note, in his *Practische Anleitung*, enumerates two forms of the disease,—the first, external syphilitic otitis, in which secondary syphilitic ulcerations occur in the auditory canal, accompanied by other well-determined symptoms of the disease. These, however, are already known to the surgeon; they resemble the ulcerations which occur on the margins of the tarsal cartilages, and are sometimes the consequences of rupia seated upon the auricle, in the vicinity of the meatus. Under the head of otitis interna, he describes that form which is the result of lues, which, he says, arises either as a reflex of the disease in the ear itself, or is propagated through the Eustachian tube, as an extension of inflammatory action in the throat. He says this disease is accompanied by great pain, and often terminates in suppuration of the middle ear, destruction of the tympanal membrane and the ossicula, caries of the temporal bone, profuse otorrhœa, and exfoliation, &c. It is evident, however, from his description, that the disease of which he speaks is the ordinary suppuration of the cavity of the tympanum, with neglected otorrhœa and caries, and in no wise characterized by any peculiar syphilitic symptom.

Lincke's usual accuracy and observation seem to have deserted him when writing his chapter upon "Otitis Syphilitica;" for, while the affection now under consideration seems totally to have escaped his observation, he has, with most laborious German assiduity, collected together a multiplicity of authorities bearing upon the subject of what are supposed to be syphilitic diseases of the ear, but not one of which he himself has verified. Thus, he enumerates from the works of

Cullerien and Plisson chancres both on the auricle and in the meatus. He also gives a description of chancres, "if they arise near or *on* the membrana tympani!" but, like Frank, his descriptions are chiefly in reference to the syphilitic otorrhœa, the result of inflammation and ulceration extending from the throat or nose, a disease which it yet remains to be proved, by original observers (not system-makers or cyclopædia-compilers), at all exists.

While Lincke's work, *Handbuch der Theoretischen und Praktischen Ohrenheilkunde*, must ever remain a most valuable book of reference, it is high time for those who wish to advance the science of aural surgery to cast off the incubus of authority, and by patient investigation and originality of observation establish facts. Kramer deserves much more credit for omitting all notice of an affection which it is evident he had never himself observed, than those writers who, with equal want of knowledge, have endeavoured, by collecting out of a variety of obscure writers some ill-recorded cases, to establish an untenable theory.

The disease which I am about to describe is an inflammation of a specific character, occurring in the membranes of the tympanal cavity, but chiefly exhibited in the external membrane of the drum. All the cases I have seen of this affection occurred in young men, and generally those of fair complexions and blue eyes, who had had primary sores upon the genitals from six to twelve months previously, which sores were rather of a deceptive character, so that mercury was seldom given in the first instance, at least in a legitimate form. These sores were usually tedious in healing, and followed by papular eruptions and sore throats, for which mercury was, in most of the cases, taken irregularly. Buboes were not a common attendant, nor had iritis ensued in any of the instances of well-marked venereal myringitis which fell under my notice; but copper-coloured blotches, fissures, and ulcers of the tongue, with loss of strength and slight nocturnal pains,

generally speaking, existed previous to the aural affection, which should, I think, be ranked as a tertiary symptom. In four cases out of five of this disease which I witnessed last year, the disease appeared suddenly, as an eruption was fading off; in the fifth it came on at a later period, and was accompanied by loss of hair; in all it appeared in the upper or middle ranks of life. In some cases there is at first a sensation of fulness in the head, and often vertigo upon stooping or rising up suddenly, and the patients have usually a feeling of fulness within the ear; but in no instance have I seen it accompanied by acute pain, in which circumstances it resembles the subacute form of inflammation already described at page 83, but upon inspection the amount of redness and vascularity will be found very much greater than the latter; and in this consists one of the chief characteristics of this disease, that while it is unaccompanied by local pain, as in the subacute inflammation, the membrana tympani will be found to present an amount of redness equal to, and sometimes exceeding, that seen in acute myringitis. The redness has generally, however, a brownish hue in the syphilitic form, which is not observable in that just alluded to. There is not, at first, much loss of polish, but in a short time the membrane assumes a fuzzy appearance. The auricle and meatus I have not seen affected more than in the subacute form; both ears are usually affected at the same time. The amount of deafness is usually very great, and is the symptom that first attracts the patient's attention, and it seldom varies. Tinnitus is not usually present, but in two cases which I possess the notes of the deafness was ushered in by a very loud noise, which passed away after a few days. This inflammation does not end in mucous or muco-purulent discharge from the surface of the membrane, or the sides of the auditory canal; nor have I seen lymph effused upon the external surface of the membrane, as in the more violent and painful forms of otitis; but from the *brownish*-red colour of the membrane in the early

stage, from a yellow-speckled opacity, which is generally observable in it on the subsidence of the redness, and from the intense degree of thickening and opacity which were present in some cases, which were evidently the result of syphilitic myringitis, I am inclined to think that lymph is largely effused between the laminæ, or upon the inner surface of the membrana tympani. Two of the worst cases of deafness (not congenital) I ever saw, appeared to have been the result of syphilitic inflammation, and in both there was great thickening, opacity, and insensibility of the membrane. I am also inclined to think that syphilis has played a more extensive part in the production of deafness than the profession is at all aware of.

Case VI.—*Syphilitic Inflammation of both Tympanal Membranes; Mercurial Treatment; rapid Recovery.*

Mr. A. B. had a doubtful-looking sore upon the penis, twelve months previous to my seeing him in October last. Considerable doubt was expressed as to the genuine syphilitic character of the sore. It healed under local treatment. Some months subsequently he had a bubo in the right groin, and a small abscess also formed on the under side of the urethra, he then rubbed in mercury, and was confined to the recumbent posture until the swelling in the groin had completely subsided. After this he experienced great weakness and lassitude, and suffered for several weeks from sore throat. These symptoms were relieved by removal to the country; but on his return to town, an eruption appeared extensively on the genitals, thighs, and abdomen, and he had also some slight deafness. These symptoms were relieved by the use of the hydriodate of potash. The eruption, however, came and went, both on its original seat and on the chest and extremities, during the next few weeks. I first saw him, with Mr. Evans, in the middle of October last; he had then no sore throat, but a fresh crop of eruption, in the form of brownish spots, interspersed with small pimples, had ap-

peared generally over the back and the outer sides of the arms. He had also become exceedingly deaf, hearing the watch only when pressed against the auricle, and he complained of a sense of giddiness and fulness in the head, but had no pain whatever in the ears, nor any snuffling in the nose. He stated that his deafness had occurred suddenly, a few hours after rising in the morning, some days before; he had had some noise at the commencement, but it had now nearly vanished. Upon inspection, the auditory canal was found dry, and the membrana tympani of an uniform dark, brown-red colour, so that the situation of the hammer bone was not easily recognizable. There was no ulceration observable, nor any alteration in the plane of the membrane; but the light was not reflected from it in the ordinary manner, thus shewing that it had lost its polish. These appearances were nearly the same upon both sides. He was able to inflate the drums perfectly, and auscultation afforded no evidence either of contraction of the auditofaucial passages, or of any accumulation of fluid within the drums.

The treatment consisted in the application of leeches round the meatus every second day, and the use of calomel and opium in small and frequently repeated doses. This mode of administering the mineral disagreeing, having produced diarrhœa and great tenesmus, we were obliged to discontinue it, and substitute inunction in its stead. The deafness and the appearance in the ear remained unaltered until the morning on which salivation was produced, and then hearing was restored almost miraculously, and the next day the redness and vascularity in the ears had almost disappeared. Gentle ptyalism was kept up for some days longer. He has not since had any return either of the deafness or other syphilitic symptoms.

I attended a case with Mr. Cusack two years ago, in which it was found necessary to keep up the mercurial action for above a fortnight, but in this instance the disease had been of a much longer standing. I treated a well-marked case last summer in

consultation with Mr. Mason, in which several relapses occurred, just as we often observe in syphilitic iritis.

VI. FEBRILE SUBACUTE INFLAMMATION ACCOMPANYING THE EXANTHEMATA AND OTHER FEVERS,—GENERALLY PRODUCING OTORRHŒA.

Although, in forming a classification of inflammations of the tympanal membrane, it became necessary to introduce the foregoing heading, it is unnecessary for me to here describe those aural affections which accompany the exanthemata, as being always accompanied by purulent discharges, I have fully detailed their symptoms and treatment in one of my former Contributions to Aural Surgery,—the essay on Otorrhœa. Moreover, I am not at present able to state from personal knowledge what are the peculiarities of the inflammation which precedes the discharge in those cases ; as, although of very common occurrence, the practitioner in aural surgery does not in general see them till long after their first appearance,—seldom, indeed, till the disease becomes chronic, and complicated with polypus ; or often not till long after ulceration has destroyed the membrane, the ossicula have been discharged, and other irreparable mischief has occurred. During the recent epidemic of influenza I have had some opportunities of examining the membrane in the early stage of this affection, and I have found it dark-red, thickened, and very pulpy, like a highly injected portion of the intestinal mucous membrane.

In the foregoing essay I may to some have appeared prolix, but on a subject comparatively so new in English medical literature, so little studied, and, consequently, so little understood, by practitioners in general, it was impossible to explain my meaning without entering into minute descriptions. If aural diseases were as attentively studied in these kingdoms as ophthalmic or obstetric medicine, then would the lengthened description of cases be unnecessary; but where do we find, throughout the whole circle of our periodical literature, half-a-

dozen well observed and accurately noted cases of diseases of the ear in a twelvemonth? Faithful observation and clinical records of disease are now more required in this than any other branch of medical science.

ART. VII.—*On the Mortality of Medical Practitioners in Ireland.* Second Article. By JAMES WILLIAM CUSACK, M. D. President of the Royal College of Surgeons, and WILLIAM STOKES, M. D., Regius Professor of Physic in the University of Dublin.

WE have again to draw the attention of the Government, the profession, and the Public, to the subject of the mortality of medical men in Ireland. Our former researches, printed in the Number of this Journal for August last, did not approach the present time nearer than the beginning of the year 1843, and it is manifest that the returns which they gave, unparalleled and appalling though they were, cannot be received as giving the full amount of mortality.

In the present communication we shall give the results of the investigations which we set on foot during the past year, so as to complete, as far as possible, the statement of the Irish medical mortality up to the present time. In the second series of inquiries the number of subjects of investigation has been increased, and information has been sought for with reference to the following subjects:

1st. The names of medical practitioners who have died since 25th March, 1843, the period up to which our former inquiries extended; 2nd. The ages at which death occurred; 3rd. The diseases which caused death; 4th. How such diseases were contracted; 5th. The qualification of the individuals; 6th. The nature and locality of the official situations held at the time of death; 7th. The names of those who have since held, and who now hold, those situations; and, 8th. A statement of what in-

fectious or epidemic diseases such practitioners have previously suffered from.

To effect these objects, upwards of 500 printed circulars were sent to our medical brethren throughout the kingdom, and above 100 private letters were despatched to individuals under peculiar circumstances. The answers to these inquiries which we have had the honour of receiving, are all attested by the signatures of the medical officers of the various institutions throughout the country; and we have thought it right to have the information thus obtained registered in a separate volume, with the names alphabetically arranged and numbered; and we intend depositing this document, for the sake of preservation and inspection, in one of our public libraries.

We have already alluded to the fact, that when medical men are attacked with fever it is eminently malignant, and that in Ireland few medical men of standing have escaped fever. We have shewn that the medical practitioners in Ireland, from various circumstances independent of the constant existence of fever in the country, are placed in a much more dangerous position than that of their brethren in England or Scotland; and that while the proportion of deaths from fever to the mortality from all causes in the general population, was only 1 in every 10.59, the deaths from fever among the medical profession were not less than 1 in 2·29 of the deaths from all causes.

In enumerating the causes of the great medical mortality of Ireland, we omitted to speak of the isolated position in which so many of our brethren are compelled to live. Under these circumstances it often happens that, from the absence of any medical adviser or assistant, the practitioner neglects or misapprehends the premonitory symptoms of disease, or its insidious progress even after it is established, and he frequently does not yield until the affection has reached to its middle stage: he is then thrown on his own resources, and, in his

anxiety to throw off disease, attempts his own cure by measures which he would shrink from in the case of another patient. To obtain competent medical advice he has to send to a distance of many miles; and though the greatest devotion is shewn by our brethren in their attendance on one another, under circumstances of extreme difficulty, yet it is plain that, when the physician has to perform a journey of from twenty to thirty miles a day to visit his patient, the attendance cannot be as close, regular, and constant as the urgency of the case requires. To these unfavourable circumstances must be added the want of proper nurse-tending. This is a matter of great importance; for if there be one disease in which the effect of skilful nurse-tending is more manifest than another, that disease is typhus fever.

We have already stated our opinion, that not only the remuneration for attendance on fever hospitals and dispensaries should be fixed at a liberal scale, but that provision ought be made for the widows and children of those practitioners who had lost their lives in the public service. Next to the loss of life of so many highly educated gentlemen, the most distressing circumstance connected with the subject under consideration is the destitute condition in which their families have been so often left. We can state without fear of contradiction, that in a large proportion of the cases of death of dispensary medical officers of Ireland, the widows and children of those gentlemen are left without provision. It might be urged that these circumstances, distressing though they be, are but the necessary results of improvidence in entering the marriage state when the prospect of a sufficient income is so distant or uncertain; but it must be recollected, that of all professions the medical is the only one in which a necessity exists for its members entering the marriage state; for reasons to which we need not allude. In Ireland the feeling which leads to this state of things is peculiarly strong; and, as a consequence, a large number of the junior practitioners, at the time they fall

victims to fever or other diseases, leave behind them an unprotected and unprovided family(*a*).

But even in the case in which the practitioner has been attacked with fever, and has had the good fortune to recover from the disease, the position of himself and his family is often one of extreme difficulty and hardship. Few men are possessed of a constitution sufficiently robust to enable them to endure the fatigues of country practice with impunity in a period shorter than three months from the subsidence of typhus. Many, it is true, urged by necessity, by humanity, or the fear of being supplanted, recommence their duties at an earlier period, although in a state of great physical weakness and nervous exhaustion, and in this way fall easy victims to a variety of chronic and acute diseases. Others become at once affected with some of the various sequelæ of typhus. Of these, diseases of the lungs and the digestive system are the most frequent, under which the patient too often sinks, as might be expected, when every external circumstance around him is calculated to depress whatever moral or physical energy that may have been left him; and should he even recover, a very great expense has been incurred during his illness, which few in country practice are well able to afford.

It must be clear to any right-thinking man that, so long as fever prevails in this country to such an extent as to render the public medical service one so fraught with danger as we have already shewn it to be, a provision ought to be made at least for the widows of those practitioners whose lives have been sacrificed by their attendance on the poor.

The duties, risks, and public remuneration of the country practitioners of Ireland are subjects which not only bear on the interests of the profession, but on those of every class of the

(*a*) According to a return of a committee for the distribution of a sum of money granted by the "London Ladies' Relief Association," alluded to at page 286 of this Journal, we learn that nineteen medical men left sixteen widows and seventy-eight children almost totally unprovided for.

community, from the highest to the lowest. For many years Ireland has been supplied with a body of highly educated medical men, a large portion of whom are the sons of the gentry of the country, or are otherwise closely related to them, and have brought with them into the profession the *status*, education, and feelings of gentlemen. But it is easy to foresee that if for the most dangerous of all medical services liberal public remuneration be not given, a lower order of men, to whom medicine will not be a profession but a trade, must come to occupy the place of that higher class of which the country has already been deprived in such fearful numbers.

The returns to which we shall now draw attention will exhibit the condition of the medical profession in Ireland in a still more alarming point of view than in our former article, shewing, as they do, a risk of life to the medical practitioner manifestly greater than that in the most unhealthy dependencies of the British Crown ; and we cannot allow ourselves to doubt that when these facts receive the attention which they deserve, that a right view of the value of the profession, and a desire for a due performance of the public service, will dictate a course of proceeding towards the Irish practitioners more calculated to reward their devoted exertions.

In many cases we received an account of the same death several times, indeed there are comparatively few instances in which we have not received duplicate returns of each death ; by this means a greater amount of accuracy has been obtained, and as the deaths were registered in the book already referred to in alphabetical order, the possibility of registering the same death twice was avoided, while an increased amount of authenticity was attained. Moreover, from the number of duplicate returns, we were enabled to complete the registry in a more efficient way than we could otherwise have effected, as what one return was deficient in, others supplied.

Under the head of medical practitioners we have included, —first, physicians and surgeons, or those holding diplomas or

licenses from some university or chartered corporate body; many of these gentlemen were also apothecaries, and several kept open shop: secondly, apothecaries, who may be classed under the head of general practitioners, for such is the position, particularly in the larger towns and cities, which they at present occupy in Ireland. The number of licentiate apothecaries in 1842 amounted to 1174, of which number nearly 700 possessed degrees in medicine and surgery: and, thirdly, pupils; for as in several instances (particularly during the late epidemic) they were intrusted with the care of the people, and having, in this way, or in prosecuting their studies in clinical hospitals, contracted fatal contagious diseases, we conceive, under these circumstances, that they have a right to be classed among the medical staff of this country.

The collected returns of all these deaths have been arranged in a tabular form at page 120, the first section of which exhibits, under thirty-eight headings, the diseases which caused death, arranged according to the simplest and most popular nosological classification, entirely taken from the causes of death specified in the returns; and the ages, set forth in quinquennial periods, from under 20, to 70 and upwards. In the four columns of the next section are arranged the various circumstances under which disease was contracted, as stated in the circulars returned to us, namely: fever attendance; hospital and dispensary duties; and general medical duties, under some of which the fatal and infectious diseases have been most frequently contracted, as well as accidents, and some fatal diseases incurred by hardship, fatigue, and such like circumstances. The column for unspecified causes it is unnecessary to explain. The next section in the table expresses the qualifications to which we have already alluded; and the fourth, that of the years in which death occurred: but we must always bear in mind that under the year 1843 are included but nine months.

In this table we have, we trust, included within the smallest

possible space the greatest amount of information which the returns afforded, as well as presented that information in the form most easily read. The last three items contained in our circular, viz., the official situations, the names of the successors, and whether such practitioners had suffered from epidemic or infectious diseases, &c., are, as far as our returns permitted, all accurately registered; but at the present period of our inquiry, and in this particular table of deaths, they do not require to be specified.

The total return of deaths for the period specified amounts to 443. Of this number, 335 were physicians or surgeons; and this item we believe to be, although deficient, nearer the truth than the return of apothecaries or pupils. These returns give an amount of deaths which we are satisfied is very much below the number which actually occurred within the last four years and nine months, among the medical officers of this country. The deaths of apothecaries returned to us for the same period amount to 88, but this we believe to be much within the actual amount of the mortality of this class. Only twenty pupils have been returned as having died within the period specified, but this number, it is manifest, is very much below the amount of deaths which actually took place. And therefore, although we have inserted these deaths in the general table of mortality, in order to shew what the risk of life is in Ireland, among persons engaged in the treatment of disease or the care of the poor, our calculations made with regard to the average general or yearly mortality among medical men, do not include or take into account these twenty pupils; at the same time we should observe, that, of the number specified, six were engaged as practitioners in the management of public institutions; eleven died during the past year; and twelve altogether of fever. The number of medical pupils attending the Dublin classes has been, upon an average, 500 annually during the last four years, and the deaths returned to us of this class have been three in 1843, one in 1844, one in 1845, four in 1846, and, as already mentioned, eleven

in 1847. It is unnecessary to enter further into the question of the deaths in this section, for it is so deficient that no fair deductions could be drawn from it, and by including them among the total deaths of medical practitioners,—physicians, surgeons, and apothecaries,—we should erroneously and unjustly lessen the actual amount of mortality per cent. of that class, either year by year or as a whole. The deaths specified under twenty years of age occurred among pupils. Seven medical officers of the army, who died while engaged on active service in Ireland during the last five years, are included in the returns of physicians and surgeons;—one died in 1843, one in 1844, one in 1845, two in 1846, and two in 1847. Only one of these, however, died of fever. They are not included in our statistical calculations made with relation to the *living*.

From the records which we possess, and from the accompanying table, a variety of curious and highly interesting statistical deductions might be drawn; but in the present communication we are only desirous of directing attention to a few incontrovertible facts, and to express these in as plain and intelligible a form as possible. We might, moreover, were it necessary, establish comparisons between the mortality which the Irish medical profession exhibits, and the proportion of deaths to the living in other countries afflicted with the most unhealthy climates, and shew a balance in favour of these above that which our profession here exhibits; or we might institute comparisons between the average proportion of deaths in the community at large, from all causes, and of the same ages, and those which the medical profession here presents, during the very prime of life, as the result of its laborious and hazardous duties. The average duration of life, or the annual amount of mortality in the medical, compared with other professions, would form a theme on which much might be written(*a*).

(*a*) In our former article upon this subject, we stated the military mortality in time of war, as a means of comparison with the mortality of Irish medical practitioners. It is scarcely necessary to add that we did not

A single fact, however, we feel to be of more importance than any of these calculations, which we leave others more versed in these matters to form,—and this fact is, that during the year 1847 one hundred and seventy-eight Irish medical practitioners, exclusive of pupils and army surgeons, died; being a proportion of 6·74 per cent., or 1 in every 14·83 practitioners in a single year; and of this number, the great majority fell victims to disease contracted in the discharge of public medical duties.

If we examine the accompanying table we find, that, of the entire number, 214 died of epidemic or contagious diseases, of whom 199 died of typhus fever; and while no age has been exempt from its fatal attacks, it has proved most destructive from 25 to 50 years, between which periods 142 deaths are recorded. Under the head of "how disease was contracted," we find 71 deaths from fever attendance, we believe, chiefly among the lower orders; thirty-four from hospital duties, where the disease was manifestly contracted from attendance in medical institutions, and almost entirely during the past year; and forty-eight from the performance of medical duties not included in either of the former headings, such as, labouring among the poor in wild and thinly populated districts, where the medical man has often to ride or drive for many hours, exposed to cold and wet, and frequently at night, suffering great fatigue, and then becoming exposed to concentrated contagion in some of the wretched isolated hovels of the peasantry.

do so with a view of proving that the medical mortality in Ireland is greater than the military mortality during a period of war; we merely wished to express the facts as we found them. The time included in the calculation, and all the circumstances connected with the positions of both parties, must be taken into account, as well as the fidelity of both sources of observation. The military mortality was complete; the Irish medical mortality was, as we stated, necessarily deficient. The former might be many times greater than the latter, but, taking all the circumstances into account, the latter might be proportionally enormous. Lest any one might misconstrue our meaning, we added a note to the foregoing effect, in the separate copies which were distributed of our former paper.

TABLE OF DEATHS OF IRISH MEDICAL PRACTITIONERS, SHEWING BY AGES

		DISEASES.	Ages. Under 20.	21 to 25.	26 to 30.	31 to 35.	36 to 40.	41 to 45.	46 to 50.	51 to 55.	56 to 60.	61 to 65.	66 to 70.	Above 70.	Unspecified.	TOTAL.
EPIDEMIC AND CONTAGIOUS DISEASES.		Fever,	6	10	37	21	41	13	30	7	10	1	3	2	18	199
		Dysentery,	..	..	2	..	2	2	3	1	..	..	1	..	..	11
		Diarrhœa,	..	..	..	..	..	..	1	..	..	1	..	..	..	2
		Scarlatina,	1	..	1	..	..	..	..	..	..	..	..	..	..	2
SPORADIC DISEASES.	Nervous System.	Epilepsy,	..	..	1	..	1	..	..	..	..	..	..	..	..	2
		Paralysis,	..	..	..	..	1	..	2	..	1	..	..	2	..	6
		Apoplexy,	..	..	1	1	1	2	3	..	3	..	..	2	..	13
		Cerebral Diseases,	..	1	2	1	..	2	1	..	..	1	1	..	..	9
		Delirium tremens,	..	..	..	1	1	2	1	..	..	..	..	..	1	6
		Tetanus,	..	..	..	..	1	..	..	..	..	..	..	..	..	1
	Respiratory and Circulating System.	Phthisis,	..	7	17	5	8	2	1	..	..	..	..	..	..	40
		Heart disease,	..	..	..	..	..	2	3	3	2	1	1	1	..	13
		Hydrothorax,	..	..	..	..	2	..	..	..	..	2	1	..	..	5
		Aneurism,	..	..	..	2	..	..	..	..	1	..	..	..	..	3
		Pneumonia,	..	..	..	2	2	1	1	..	..	..	..	..	..	6
		Hæmoptysis,	..	..	1	..	..	..	..	..	..	..	..	..	1	2
		Bronchitis,	..	..	..	..	..	..	1	1	..	..	2	6	..	10
		Asthma,	..	..	..	..	..	1	..	..	..	..	..	..	..	1
		Chest disease unspecified,	..	..	..	..	1	..	1	1	..	..	1	1	..	5
	Digestive System.	Peritonitis,	..	..	..	..	..	..	..	..	1	..	..	..	..	1
		Dropsy,	..	..	1	..	2	1	5	1	3	1	..	..	..	14
		Disease of Liver,	..	..	1	2	1	1	..	1	1	..	..	2	..	9
		Disease of Stomach,	..	..	..	..	1	..	..	..	..	..	..	..	..	1
		Enteritis,	..	..	1	..	2	..	..	..	..	..	..	..	..	3
		Hæmatemesis,	..	..	..	1	..	..	..	..	..	..	..	..	..	1
	Urinary System.	Disease of Kidneys,	..	..	1	1	..	..	1	..	1	..	..	..	..	4
		Urinary diseases,	..	..	1	..	..	..	..	..	1	..	..	..	..	2
		Disease of Bladder,	..	..	..	..	..	..	..	..	..	..	1	1	1	3
	Uncertain Seat.	Tumour,	..	..	..	..	..	..	..	..	1	..	..	..	..	1
		Anthrax,	..	..	..	..	..	1	..	..	..	..	..	..	..	1
		Dissecting wound,	..	1	..	..	..	..	..	..	..	..	..	..	..	1
		Abscess,	..	..	..	..	..	1	..	..	..	..	..	..	..	1
		Old age and debility,	..	..	..	..	..	..	..	..	1	..	6	4	..	11
		Marasmus,	..	..	..	..	..	1	1	..	..	..	..	..	..	2
VIOLENT OR ACCIDENTAL DEATHS.		Suicide,	..	..	3	..	1	1	..	..	..	..	..	..	..	5
		Drowned,	1	..	1	..	1	..	..	..	..	1	..	..	..	4
		Intemperance,	..	..	..	1	..	..	..	1	..	..	..	..	..	2
		Fall from horse,	..	..	1	..	1	..	1	..	..	..	..	..	..	3
		Unspecified,	1	..	2	1	3	4	1	..	3	1	3	1	18	38
		TOTAL,	9	19	74	39	73	37	57	16	29	9	20	22	39	443

THEIR AMOUNT AND CAUSES, FROM 25TH MARCH, 1843, TO 1ST JANUARY, 1848.

How Disease was contracted.				Qualifications.			Years.				
Fever Attendance.	Hospital Duties.	Medical Duties.	Unspecified.	Physicians or Surgeons.	Apothecaries	Pupils.	1843.	1844.	1845.	1846.	1847.
71	34	48	46	138	49	12	17	11	18	30	123
..	..	2	9	8	3	..	2	..	1	2	6
..	..	..	2	2	..	..	..	..	1	..	1
..	..	1	1	1	..	1	..	..	..	1	1
..	..	..	2	2	..	..	1	..	1	..	..
..	..	1	5	5	1	..	1	2	..	3	..
..	..	..	13	12	1	..	1	..	4	2	6
..	1	2	6	8	..	1	3	..	2	..	4
..	..	..	6	3	3	..	1	1	1	2	1
..	..	..	1	1	..	..	..	1	..	..	..
1	..	5	34	29	9	2	7	10	3	7	13
..	..	4	9	12	1	..	5	1	3	2	2
..	..	1	4	3	2	..	..	..	4	1	..
..	..	..	3	3	..	..	..	1	..	..	2
..	..	5	1	4	2	..	..	..	3	2	1
..	..	..	2	1	1	..	..	2	..	..	..
..	..	4	6	10	..	..	..	..	3	5	2
..	..	1	..	1	..	..	..	..	..	..	1
..	..	..	5	4	1	..	1	1	2	1	..
..	..	..	1	1	..	..	..	..	1	..	..
..	..	1	13	11	3	..	2	1	3	6	2
..	..	1	8	8	1	..	1	2	..	5	1
..	..	..	1	..	1	..	..	..	1	..	..
..	..	2	1	3	..	..	1	1	1	..	..
..	..	..	1	1	..	..	..	..	..	1	..
..	..	..	4	3	1	..	2	1	..	1	..
..	..	..	2	2	..	..	..	..	1	1	..
..	..	..	3	2	1	..	..	..	1	1	1
..	..	..	1	1	..	..	..	..	..	..	1
..	..	..	1	..	1	..	1	..	..	..	..
..	..	..	1	..	..	1	..	..	..	..	1
..	..	..	1	1	..	..	..	..	1	..	..
..	..	..	11	9	1	1	..	3	1	3	4
..	..	..	2	2	..	..	1	..	..	1	..
..	..	..	5	5	..	..	..	..	..	2	3
..	..	.	4	3	..	1	1	..	1	..	2
..	..	..	2	2	..	..	..	1	..	..	1
..	..	..	3	3	..	..	..	1	..	..	2
..	..	..	38	31	6	1	4	4	9	11	10
72	35	78	258	335	88	20	52	44	66	90	191

Another description of risk arising from exposure and fatigue, but which may be classed under the same heading, has been incurred in the garrets and cellars of the ill-ventilated, badly-sewered, and, consequently, most unhealthy portions of our principal towns. Forty-six remain unspecified, for want of due information in the returns; but there can be little doubt that many, if not all of these, might be distributed among the three foregoing headings, were our information perfectly accurate.

The three first years in which these deaths from fever took place do not present any very remarkable contrast, either with one another or with the known mortality from typhus, as it occurs endemically in this country, being, during the nine months in 1843, seventeen in fifty-two deaths; in 1844, eleven in forty-four deaths; in 1845, eighteen in sixty-six deaths; and in 1846, twenty-nine in ninety deaths(*a*); but in 1847 we have 114 deaths, exclusive of those of pupils, in 180 deaths, or 123, including all the qualifications, in 191, being 1 death from fever in every 1·55 deaths from all causes, or 64·51 per cent. in a single year,—a condition which would scarcely be credited were not the facts before us, and the name and circumstance of every such death accurately registered and verified. Now, Mr. Wilde has shewn that "the total deaths from fever in Ireland during the ten years included between June, 1831, and June, 1841, afforded by the Census Returns, amount to 112·072,—being 1 death in every 10·59 of the mortality from all causes, and 1 in 3·4 of the deaths of the total epidemic class of diseases."

Among the diseases of the nervous system, thirty-seven deaths have been registered, and of these, twelve occurred from apoplexy, chiefly among physicians and surgeons. Four of the deaths in this class have been vouched to us as having occurred as the consequence of the performance of severe medical duties. In this and the five following classes of disease, the "years" do not offer any peculiarity worthy of investigation; and with the exception of the next (the third) class in the

(*a*) One army surgeon died of fever in 1846.

nosological table, the same observation holds good with respect to the manner in which disease was contracted.

Under the head of the diseases of the respiratory and circulating system, eighty-five deaths have been returned, of which number forty occurred from phthisis,—a disease to which the Irish medical practitioner, particularly in the rural districts, is, from his occupation, peculiarly liable; and in six instances we have authority for stating that phthisis followed fever contracted in the discharge of medical duties. The two next most fatal causes of death in this class were—heart disease, 13, and bronchitis, 10.

Twenty-nine deaths occurred from affections of the digestive organs, the most frequent of which was dropsy, and next to that affection, diseases of the liver. Four deaths of this class have been returned to us as the result of the performance of medical duties; two from the diseases just alluded to, probably because the original affection was the result of cold and exposure; and from a like influence have two deaths, registered under enteritis, been traced by the medical gentlemen who signed the returns.

Diseases of the urinary organs amount to nine: they chiefly occurred in persons advanced in life.

Seventeen deaths are enumerated under the head of those of "Uncertain Seat," the principal item in which is old age and debility, under which eleven deaths are registered.

The entire deaths resulting from sporadic diseases amounted to 177; and, including fourteen from accidental causes, and thirty-eight unspecified, it would make the proportion of contagious and epidemic diseases (which are chiefly contracted in the discharge of duty), 1 in 1·93, or 51·86 per cent. of the entire number from all causes.

Fourteen accidental or violent deaths are recorded, of which we regret to say five are registered cases of suicide. Of these five, two happened in 1846, and three in 1847. The distressed condition of our medical brethren,—the great hardships they have endured,—the hopeless distress which they daily witnessed,—and the mortality of their brethren around, as well as the ge-

nerally depressed state of the community,—may, no doubt, be assigned as causes which will account, in some measure, for this sad state of things. We believe that some of the deaths in this class, such as "drowned," and "fall from horse," occurred while the practitioners were engaged on professional service; but, the returns being silent upon this subject, we have not so entered them. On the whole, there is every reason to believe that the enumeration of the diseases is more correct than those set down in statistical returns; and while we have taken every pains to arrive at the truth from the best authorities, we have registered as unspecified all those where the cause of death was doubtfully stated. Under this latter head will be found thirty-six deaths; and could we have procured the cause of death in these cases, they would, when distributed through the other sections, have rendered the array of deaths, particularly from epidemic diseases, more appalling. But medical men located in some of the distant mountain districts are themselves so separated from medical aid, that death has often occurred without the sufferer having been visited by any professional attendant. The ages we believe to have been given with tolerable correctness, and being in the table arranged in five-year sections, the numbers fall within the *actual* periods. Many remarkable comparisons might be made between the ages at which death has taken place among the medical profession in Ireland, and other members of the community, aged between 20 and 70. The deficiency in our returns occurred principally in the earlier years over which our inquiry extends; but, in a country like this, where there is no general registry of deaths as in England, nor any registry of the deaths of the members of the medical profession, either by the respective bodies to which they belong, or the public offices, such deficiencies must naturally be expected.

We have now but to seek to arrive at an approximation to the actual amount of mortality per annum, or the proportion which these deaths bear to the number of practitioners in Ireland. As already stated, we exclude the pupils, only a

moiety of whose deaths are undoubtedly returned, and also the army surgeons. Where the members of the medical profession belong to such a number of colleges and licensing bodies in Great Britain, as well as those in Ireland, it would not be possible to obtain the actual numbers from any of the lists of these bodies; but a Census of the medical profession having been twice published within the period over which our inquiry extends, we are able to form a very close approximation to the actual average numbers. In Dr. Croly's Medical Directory, published in 1843, the number of medical practitioners, including apothecaries, in Ireland, exclusive of Dublin, amounted to 2109, and taking Dublin at 482, as enumerated in the Directory for 1846, it makes 2591; but in the more perfect one published in 1846, the numbers were as follows, for all Ireland: 1989 practitioners, holding degrees in medicine and surgery; 513 apothecaries, who did not hold such diplomas; and 120 practitioners, whose qualifications were unspecified: in all 2622; and we do not believe that the actual amount has ever exceeded 2700(*a*). Since then the profession has not been on the increase, and considerable emigration, as well as the very great mortality, has served to keep the number of practitioners in Ireland within that amount. When we state that 2650 has been the average of the medical practitioners of Ireland (including apothecaries who do not hold degrees), for the last five years included in our inquiry, we believe that we have made the nearest approximation possible to the actual amount. If we distribute the 416 deaths (which do not include pupils or army surgeons) over the five years, we find an

(*a*) The census for 1841 reckoned under the head of those "Ministering to Health," 3820 physicians, surgeons, and apothecaries; but this, we have reason to know, was, from the character of the returns incorrect. The only authority on which an estimate can be made is that published by Dr. Croly, in which the names, qualifications, and addresses of each person are set down, and until this is controverted it must be an authority. We know that the profession has been usually supposed to be 3000, but without any authority; and, on the other hand, we have found (and we have had some experience in this matter) Croly's Directory wonderfully correct.

average mortality of 3·14 per cent., or 1 in every 31·77; but then it must be remembered that the early years of our inquiry are very deficient, and that the returns for the year 1843 are only for nine months. Taking the proportion in years, we find the following returns:—1843 (deficient three months), 1 in 55·20; in 1844, 1 in 63·1; in 1845, 1 in 41·40; in 1846, 1 in 31·55; and in 1847, 1 in 14·89, or 6·71 per cent. So that during the healthy years in Ireland we have an average mortality of 1 in 53·23; and taking 1846 and 1847 as unhealthy periods, 1 in 23·22; but it is manifest that our returns are very deficient for the early years.

The only other question which we at present think necessary to bring forward in this paper, is the proportion of mortality in the provinces, both from epidemic and sporadic diseases, under which latter we have included the violent and accidental deaths, as well as those unspecified.

Provinces.	Years.					
	1843.	1844.	1845.	1846.	1847.	Total.
Leinster, . . .	20	11	20	26	33	110
Munster, . . .	19	9	15	15	48	106
Ulster, ...	4	9	11	20	44	88
Connaught, . .	4	5	9	4	25	47
Unspecified, . .	2	9	10	21	30	72
Total,	49	43	65	86	180	423
Pupils, ...	3	1	1	4	11	20
	52	44	66	90	191	443

We have received a return of only thirty-three deaths from the city of Dublin, during the period over which our inquiry extends.

We will now conclude these investigations for the present, but we must repeat that though we have endeavoured to ascertain, by three series of investigations, the mortality of the Irish medical profession, that our results must be taken as giving an amount considerably below the truth.

We have to express our thanks to many of the physicians and surgeons of Ireland, who have so promptly and carefully answered our inquiries; and we would particularly specify Dr. Little of Sligo, by whose exertions a great quantity of information, not only bearing on the mortality of the profession, but on the question of the necessity for a provision for the families of gentlemen who have lost their lives in the public service, has been obtained. We have also to return thanks to Dr. Lynch of Loughrea for important information on these topics.

Finally, we beg to offer our acknowledgments to the Editor of this Journal, Mr. Wilde, for the time, labour, and care, which he has bestowed in the necessary correspondence of the last investigation, and on the arrangement and tabulation of the returns in both series of investigations. Without his assistance, indeed, we could hardly have given the arranged table of diseases at page 120–21.

The following deductions may be drawn from the inquiries which we have instituted upon this highly important subject, as shewn in this and our former communication:

1. That the physicians and surgeons of Ireland are, by their profession, more exposed to the influence of fatal diseases than any other class of the community of a similar grade; and that they are at all times liable to these influences, from the period of their entering the profession as students to advanced life.

2. That few, if any, of the medical profession in Ireland, escape typhus fever; that many have had it twice, and several three times.

3. That the fevers of medical men in Ireland are almost always of a bad character, even when the epidemic is not of the worst kind; and that, consequently, fever has proved more fatal to medical men than to any other class of the community of a similar grade in this country.

4. That the fevers and other infectious diseases, from which

our profession suffers so severely, are generally contracted in discharge of public duties, either in attendance upon sanitary institutions, or in the miserable, ill-ventilated, and dirty dwellings of the poor.

5. That, according to our returns received for the period prior to 1843,—undoubtedly deficient,—568 out of 1220 practitioners in charge of medical institutions suffered from typhus fever; of these, twenty-eight had fever twice, and nine three times; and that, of the whole number, three hundred, or one-fourth, died.

6. That the calculations contained in the papers which we have now laid before the public shew that, of 743 deaths of medical men, of which we possess the particulars, 331 were caused by typhus fever, or 1 in every 2·24;—nearly forty-five per cent. of the whole.

7. That, during the prevalence of the late epidemic, 500 Irish medical men, at the lowest computation, suffered from fever or other epidemic diseases, contracted, for the most part, in discharge of public duties, by which themselves and their families have suffered considerable loss.

8. That about one-fifteenth of the entire medical community of Ireland have died during the year 1847.

9. That during the continuance of an attack of fever, and in cases of recovery for a long period subsequent to it, the families of medical men are deprived of their exertions,—usually their only means of support.

We think that as the risk incurred in the public medical service in Ireland is so great, an adequate remuneration should be afforded for the performance of these services; and as the widows and children of medical men who have died during the last two years have been, in many instances, left totally unprovided for, we most earnestly recommend to the consideration of the Government, the propriety of making some legal provision for the families of those gentlemen whose lives have been sacrificed to the public service.

PART II.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

Fevers, their Diagnosis, Pathology, and Treatment. Prepared and edited, with large Additions, from the Essays on Fever in Tweedie's Library of Practical Medicine. By Meredith Clymer, M. D., Professor of the Principles and Practice of Medicine in the Franklin College of Philadelphia, &c. Philadelphia, Lea and Blanchard. 1847. 8vo. pp. 604.

The History, Diagnosis, and Treatment of the Fevers of the United States. By Elisha Bartlett, M. D., Professor of the Theory and Practice of Physic in the Medical Department of Transylvania University, &c. Philadelphia, Lea and Blanchard, 1847. 8vo. pp. 547.

Although we have good cause to complain of the want of an international Copyright Act between the United States and England, in consequence of which, and the absence of duty on paper there, books are republished in America soon after their appearance in this country, without any profit to the original authors or publishers, and, in most cases, without their consent; nevertheless, in some instances, this unfair practice is not altogether unproductive of beneficial results. A book thus republished gains, unquestionably, very great additional circulation, and the author's fame is consequently much extended; moreover, the habit of writing which the editor of the reprint of necessity acquires, induces him to augment the original work with notes, and often with much new matter on subjects not sufficiently noticed, or, perhaps, altogether omitted. We thus frequently obtain valuable contributions to medical science, which, under other circumstances, would, probably, have never seen the light; and the favourable reception which those contributions have met with has, in many instances, induced the writers to publish on their own account. That such a result is

of frequent occurrence, is sufficiently evident from the fact, that most of the celebrated American medical authors have originally appeared in the field of literature, as editors of English reprints.

Dr. Clymer has edited several reprints of British medical works, of which we may enumerate Dr. Williams's Principles of Medicine, Dr. Williams's Treatise on Diseases of the Respiratory Organs, and Dr. Carpenter's Human Physiology, the value of which, to American readers, has been much increased by his notes and additions. In the volume before us he has selected the various treatises on febrile diseases, contained in different volumes of Dr. Tweedie's Library of Medicine, placed them in juxtaposition in one volume, and enriched the text with numerous notes and additions, both original and derived from other writers, together with an entirely new chapter on the typhoid fever of America and the Continent of Europe. It thus contains Dr. Christison's essays on the general doctrines of fever, on continued, and on hectic fevers; Dr. Shapter's essays on the plague, yellow fever, and intermittent and remittent fevers; Dr. Locock's on infantile, remittent, and puerperal fevers; Dr. Gregory's on small-pox; Dr. George Burrowes's on measles and scarlatina; and Dr. Clymer's on typhoid fever.

As books of this character are not allowed to be imported or sold in the British dominions under a heavy penalty, we purpose making our readers acquainted with some of Dr. Clymer's original additions and comments on the essays he has here republished.

The first essay in the American, as in the English edition, is by Dr. Christison on the general doctrines of fever. It contains, as most of our readers are, no doubt, aware, a masterly exposition of the various views entertained on this much disputed question by the British and Continental schools of medicine since the days of Cullen; to these Dr. Clymer has added copious extracts from the treatises of Dr. Copland, Dr. Alison, and Dr. Southwood Smith, which render this part of the work as complete as the concentrated experience of some of the best of our modern writers on fever could make it.

With respect to the classification of fevers, as of other diseases, we are of opinion that the simplest is always the best, provided that the lines of demarcation between the divisions made are sufficiently broad and distinct, and that no single class is too extensive. We have always had a great horror of those nosological systems which, at an era of our profession not very remote, were fashionable amongst the great medical writers, and which, in the present practical age, we contem-

plate with amazement at the extraordinary powers of subdivision possessed by their propounders, and with an inclination to lament the labour and time thrown away in their composition(*a*). We are not, then, inclined to quarrel with Dr. Clymer when he says:

"The simplest arrangement, and, perhaps, the best for practical purposes, is that founded on the peculiar phenomena which are constantly presented by the different forms of fever, constituting the types. In one variety we have the febrile phenomena interrupted, absolutely or incompletely, at certain periods; whilst in another the train of phenomena proceeds in an uninterrupted series; and a third is accompanied with a peculiar and characteristic eruption. The order that we shall observe, therefore, will be: 1. *Continued Fevers;* 2. *Periodical Fevers;* and 3. *Exanthematous or Eruptive Fevers.*

Amongst continued fevers Dr. Clymer places ephemeral fever, and we shall give his description of it in full, both as an example of the completeness which an American reprint gives to an English book (no mention was made of this form of fever in Dr. Christison's original essay), and as a specimen of the editor's style. The definition is taken from Dr. Copland:—increased frequency and strength of pulse, with heat of skin, headach, thirst, and white, excited tongue, terminating in perspiration, generally within twenty-four hours.

"It is a frequent disease in this country, and is the slightest as well as the simplest of all primary febrile disorders, and is so named from its seldom lasting longer than a single diurnal revolution.

"Causes.—It is often difficult to discover any unequivocal cause for an attack of ephemeral fever. It affects chiefly children and young persons, and frequently seems to be excited by the atmospheric vicissitudes during the irregular weather of the spring months in temperate climates. Excessive muscular and mental exertion, from prolonged exercise or intense study,—exposure to the sun,—the intemperate use of alcoholic drinks,—disorder of the digestive organs from repletion,—or the nature of the ingesta,—or congestion of the liver,—or a vitiated condition of the secretions of the primæ viæ,—are all capable of producing an attack. The febrile condition often excited in puerperal women on the first secretion of milk has, by most writers, been classed under this head.

"Symptoms.—In the acuter form of ephemeral fever the inva-

(*a*) Cullen's system of nosology consists of 4 classes, 20 orders, and 149 species; Mason Good's, of 6 classes, 18 orders, 120 genera, and 445 species Sauvage's of 10 classes, 44 orders, and 315 species; and Vogel's of 11 classes, 12 orders, and 560 species.

sion is generally sudden, the attack commencing with a chill; but in mild cases there are lassitude, yawnings, general malaise, with a feeling of irritation or excitement. These symptoms, or the initial chill, when occurring, are soon succeeded by heat of skin, and cephalalgia. The face is flushed and animated, but the expression is natural; the pulse is frequent, strong, and full; there is frequently pain in the small of the back, with a sense of great weariness and soreness in the limbs; the thirst is intense; there is no appetite; the tongue is white, the papillæ enlarged; the mouth is dry, with a bad taste, and the urine scanty and high-coloured; the skin, though hot, is usually soft. In children, and in some women, when the attack is severe, slight delirium may supervene for a short time. Exploration of the chest and abdomen discovers no lesion of the contained organs. These symptoms, with restlessness, languor, want of sleep, and general uneasiness, having lasted for six, twelve, or eighteen hours, the fever begins to diminish, the skin becomes moist, the urine more copious, and depositing a sediment, and free perspiration occurring, the attack subsides within twenty-four hours, though occasionally it continues for several days, assuming the character and type of *Inflammatory Fever*. Sometimes the patient continues listless and feverish on the following day, does not feel disposed to quit his bed, and passes an uncomfortable day, with slight febrile exacerbation towards evening. After a good night's rest, however, he usually awakens refreshed and well.

"Diagnosis.—It is often extremely difficult to decide at the outset of an attack whether it is a case of ephemeral, periodic, or continued fever. The absence or presence of the causes just enumerated may assist our inquiry, whilst the non-occurrence or insignificance of the initial chill, and the continuation of the fever beyond six or eight hours, will often enable one to distinguish it from intermittent fever. The amount of vascular excitement, the slight depression of the nervous powers, and the very transient duration of the premonitory symptoms, will serve to distinguish it from the more serious varieties of fever.

"Prognosis.—The prognosis is, of course, favourable; but it should be borne in mind that sometimes the disorder is prolonged beyond the diurnal period, and assumes the character of synocha.

"Treatment.—Confinement to bed, abstinence from food, and demulcent drinks, are often all that is necessary for an attack of ephemeral fever, whose tendency is towards a favourable termination, and which, indeed, requires little or no treatment. If, however, the disorder has followed exposure to a hot sun, and there is much vascular excitement, with cerebral symptoms, blood-letting may be advisable, together with active purging, and cold applications to the head. If the attack be subsequent to a debauch, the stomach and bowels should be freely evacuated: when the stomach is irritable, small doses of the nitrate of potash, in combination with the muriate of ammonia, may be administered. When the skin is

dry and unperspirable, diaphoretics should be administered. Cold, or even iced drinks, may be freely allowed when wished for, together with small quantities of soda water."—p. 75.

For our own part, we place most confidence in the administration of an emetic at the very commencement of an attack of ephemeral fever, more especially in strong constitutions or in young persons. We have no doubt that a continued fever is, in many cases, cut short and converted into an ephemeral attack by this remedy when it is given sufficiently early; where, however, an epidemic is raging, we must have due regard to its type; for if it be of an asthenic or typhoid character, an emetic, so far from cutting short the disease, generally proves injurious. Thus, in the epidemic fever which has just passed over our heads, we have seen but very few cases in which the administration of an emetic was admissible at the outset; and we do not remember a single instance in which the disease was cut short by it.

In the chapter on inflammatory fever the editor has inserted analyses of the blood from Andral and Gavarret, Becquerel and Rodier, and Jennings; he also gives copious extracts from Dr. Stevens' and Dr. Copland's works, on the *seasoning* or inflammatory fever of hot climates. We find, moreover, an excellent account of the epidemic of 1843-44, which visited Scotland and parts of England, chiefly compiled from the writings of Alison, Cormack, Craigie, and Arnott. He has not omitted to notice Dr. Mackenzie's observations, as to the great similarity between this fever and several of the Irish epidemics; and which resembled our present epidemic, chiefly in the very great tendency to relapse,—a tendency remarked by all who have as yet described this fever, and which is especially noticed by Dr. Lalor, in the present Number of our Journal, in his graphic and valuable account of the late epidemic as it appeared in Kilkenny.

The chapter on typhus fever is much improved by the numerous additions which the editor has made to it, more especially on the causes, prevalence, and mortality of the disease, extracting largely on these different heads from the published accounts of the several epidemics, down to that of 1843–44; thus supplying a great want in the original essay,—statistical details. We are also glad to find, in the section on treatment, an excellent though short *resumé* of Dr. Stokes's observations on the administration of wine in fever, the value of which seems fully appreciated in America, as indeed they are in every civilized part of the globe. Where nervous symptoms are prominent, Dr. Clymer seems to place much faith in camphor; and as we

have been led to entertain a very high opinion of its efficacy in the treatment of adynamic fevers, from our own experience of its effects in an epidemic of gaol fever, which visited the County Tipperary Prison in 1836–37, then under our charge, we give the following extract, containing Dr. Gerhard's opinions as to the benefit derived from its use in the Philadelphia epidemic of 1836,—they so fully correspond with our own:

"Camphor was certainly amongst the most useful and powerful of our remedies. We used it largely in the severe cases, especially those in which the atonic nervous symptoms were very marked; and we had no reason to repent of its employment. In general there was a marked diminution of some of the most prominent and harassing symptoms. We gave the camphor in emulsion in doses of five grains every two hours, and in enema in doses of a scruple. The immediate effect was the lessening of the subsultus and tremors, for which it was chiefly administered, and sometimes the diminution of delirium. In some cases we possessed a complete control over the subsultus, which was immediately checked by an injection containing a scruple of camphor. It would cease for some hours, but afterwards return with nearly its former severity. Still it was a useful palliative, and, like most remedies of its class, acted as a useful balance-wheel in preserving the harmony of the system, until the disease had passed through its natural course. The camphor frequently acted powerfully as an anodyne when sleep had been interrupted by the previous disturbance of the nervous system."—p. 222.

Typhoid fever is the name given to the sporadic or endemic fever of the middle and northern States of America, which is now proved to be identical with that of the temperate latitudes of the Continent of Europe,—France, Germany, Sweden, &c. That it differs, in many essential particulars, though probably a variety of the same species, from the ordinary *typhus* fever of the British Islands, where, however, it is an occasional visitant, has been sufficiently shewn by numerous essays on the subject by both American and French writers. Our readers will find two of these,—one by Dr. Lombard, of Geneva, and the other by Dr. Gerhard, of Philadelphia,—in our former Series; and we would also direct their attention to a review of the first edition of Dr. Bartlett's work on typhoid and typhus fever, in our twenty-sixth volume, as containing an account of the views of the American school on this subject(*a*).

(*a*) The epidemic fever described in Dr. Lalor's essay in our present Number, to which we have already referred, is, we think, very nearly allied to *typhoid* fever; the slight difference in some of the symptoms, and the complication with purpura, must be ascribed to the peculiar cachectic state of those whom it attacked.

In the chapter on typhoid fever, contributed by Dr. Clymer to the volume before us, it is defined to be

"An acute affection, whose anatomical character is an enlargement and special alteration of the intestinal follicles, accompanied by increase of volume, injection, softening, and, occasionally, suppuration of the corresponding mesenteric glands. The usual symptoms are, continuous fever, of variable intensity; stupor, prostration, pain and gurgling on pressure in the right iliac region; an eruption, generally observed on the abdomen and lower part of the thorax, of lenticular, rose-coloured, slightly elevated papillæ, disappearing on pressure; meteorism, diarrhœa, pulverulence or brownish coating of the interior of the nostrils."—p. 234.

The treatment of typhoid, as of other fevers, should be conducted, Dr. Clymer thinks, chiefly on the expectant principle, being auxiliary, and directed towards the shelter of the essential functions from serious harm: consideration must be had also to the prevalent epidemic constitution, which is constantly changing. Local complications are the most frequent causes of danger, and require to be carefully watched. Though sometimes of an inflammatory character, we fully agree with our author that evacuants, more especially general blood-letting, are, as a general rule, but ill borne in their treatment: when bleeding is absolutely requisite, it should be local, either by the application of cupping-glasses or leeches, according to circumstances. In the general treatment of this form of fever, it must be borne in mind that the patient may perish from mere exhaustion or asthenia, and that, in general, the free exhibition of wine, brandy, carbonate of ammonia, quina, &c., is attended with benefit, and the fault usually committed is, not resorting to them sufficiently early. The due and proper administration of nourishment, also, from the very commencement of the disease, a point so forcibly put forth by Dr. Graves in his Clinical Lectures, must not be overlooked. How much truth is in the following paragraph, with which Dr. Clymer concludes his observations on treatment:

"A number of specific methods of treatment of typhoid fever have lately been proposed. One cures all his cases by purgatives or emetocathartics; another is equally successful with small doses of the nitrate of silver; whilst a third lauds the extraordinary power of alum or chlorine water. In a disorder where so many recover spontaneously, there are too many difficulties and sources of fallacy to warrant our attributing to any exclusive method of treatment the merit of effecting cures, especially when such a plan is repugnant to analogy or general therapeutic principles."—p. 259.

The chief additions which we find to Dr. Shapter's Essay on Plague, consist of extracts from the writings of Clot Bey, Grassi, Ferguson, and the Parliamentary Reports on Quarantine, bearing on the question of the causes of the disease, more especially as regards contagion. Dr. Clymer himself is of opinion that the plague is like small-pox, both contagious and infectious.

The chapter on yellow fever is enriched with an account of some of the most recent epidemics which have occurred in America; that which appeared in Jersey in 1839 met with an able historian in Dr. Ashbel Smith, of Galveston. From his description of the disease Dr. Clymer extracts largely. The black vomit, which constitutes the most constant phenomenon of the disease,—by many looked on as pathognomonic,—seems to have been very rarely absent; indeed, in some fatal cases, it was almost the only symptom present. In one reported by Dr. Dickson, of Charleston, that of an engineer of a steamboat, the patient retained, to the moment of his death, his uncommon muscular strength,—presenting a singular spectacle, going about from room to room, and into the piazza, when, from the urgent irritability of his stomach, he was obliged to carry with him a vessel to receive the black vomit, which he threw up frequently, and in large quantities. In *all* fatal cases the black vomit was found in the stomach after death.

With reference to the treatment of yellow fever, Dr. Clymer deservedly lays much stress on the fact, that the disease assumes divers types in various years, and in different latitudes. Thus Dr. Nott witnessed five epidemics of yellow fever at Mobile,—in 1837, 1839, 1842, 1843, and 1845,—each of which presented some predominant peculiarity of type, and all demanded some modification of treatment. For a general plan of treatment, we would be inclined to place much faith in that adopted by Dr. Imray in the Dominica epidemic of 1841, and published by him in an admirable paper on the Nature, Causes, and Treatment of Yellow Fever, in the sixty-fourth volume of the Edinburgh Medical and Surgical Journal.

To Dr. Shapter's Essay on Intermittent Fever, the American editor has made but few additions, and these do not possess sufficient novelty to induce us to detain our readers with an account of them.

Remittent fever being very prevalent, and often of a very violent type, in the middle, southern, and western districts of the United States,—constituting, in fact, the seasoning fever there, even to visitants from the northern districts,—possesses much interest for American readers, and we consequently find

that Dr. Clymer has made large additions to Dr. Shapter's original essay. But as, from the rarity of the disease in the British Islands, it does not possess the same interest for our home readers, we omit any notice of them.

No additions have been made to Dr. Locock's valuable treatises; nor to the masterly article by Dr. George Gregory, on small-pox.

The chief additions to Dr. Burrowes' Essay on Measles consist of extracts from MM. Rilliet and Barthez; and those to the Essay on Scarlatina, are from the most recent British writers on that disease.

From the review which we have now taken of Dr. Clymer's additions to this reprint, our readers must perceive that the value of the original essays has been much increased by their appearance in an American garb. And we would feel obliged to our friends on the other side of the Atlantic if they would more frequently furnish us with their editions of our standard works, to enable us to make our readers acquainted with the valuable additions which they so generally make to them.

Dr. Bartlett's work is a second edition of that noticed in the twenty-sixth volume of our former series, although not stated to be so in the title-page; which the author explains by saying in his short preface, that it is in some respects a new work, the account of periodical and of yellow fever being extended to nearly half the volume, while before it occupied less than sixty pages; "but the history of typhoid and typhus fever remains in much the same state, with such additions and developments only as further observation and study have enabled him to make."

In these additions, we are glad to find that Dr. Bartlett has repaired some of the omissions we noticed in our review of his book, more especially with reference to the causes of typhoid fever and the influence of malaria on its production. This information has been chiefly derived from the answers of medical men, practising throughout the United States, to letters addressed to them by the author. From these it would appear that the disease is met with indiscriminately in crowded cities, where it appears to be propagated by contagion, and in country districts, where the evidence as to its contagious character is not so manifest,—notwithstanding Dr. Clymer's assertion, which does not appear to us to be supported by the evidence he adduces, "that the contagion of typhoid fever is much more active in rural districts than in populous cities." It prevails generally in elevated districts, and is but rarely seen

in low, marshy soils. Thus, Dr. Coe, of Dekalb county, Georgia, says that the section in which it prevails in his part of the States "is elevated, with a poor soil, and has only one small stream passing through it." And Dr. Wooten, of Lowndesboro', Alabama, relates the following curious fact:

"There is a circumstance connected with its prevalence here worthy of note. We have a high ridge of land, possessing a sandy and gravelly soil, which affords many springs of good free-stone water, and is selected by many planters who occupy the surrounding country for their residences. This ridge is about six miles long, and from one to three miles wide, and at its nearest point about three miles from the Alabama river. It is surrounded by prairie plantations and prairie sloughs on all sides, except that towards the river, where it is bordered by a low, pondy, and malarial country. In all the surrounding country, intermittent and remittent fevers are an annual matter of course occurrence, whilst the true typhoid is extremely rare, though cases of it do sometimes occur. But upon the ridge, where remittents and intermittents are of very rare occurrence, the typhoid cases are of frequent occurrence, especially during the last few years; so that many planters say they would prefer remaining on their plantations, and having their regular turn of chills and fever, to residing on the ridge and risking this slow fever."—p. 93.

We do not feel ourselves called on to notice at any length the third and fourth parts of Dr. Bartlett's work, which constitute the chief difference between his first and second edition, as the diseases of which they treat possess but little interest for Europeans, and, consequently, for the majority of our readers.

The third part is devoted to the description of periodical fever, under which name are included intermittent, bilious remittent, and pernicious remittent or congestive, fevers, as the author considers these to be the three principal forms, or *varieties*, in which the former, "the integral, individual, nosological disease," shews itself.

As we were compelled to remark, in our review of the first edition of Dr. Bartlett's book, we must say the very same now, that "we find scarcely anything of original matter" in these additions. They are made up of the opinions of others, on which the author scarcely ever attempts to indulge an observation derived from his own experience. We do not know any system of writing, or rather compilation, more injurious than this, whether for the student or practitioner. What is more calculated to inculcate unsettled views, and, consequently, hesitating practice, than to have the opinions of seven or eight eminent medical men, practising in various parts of

the world, and all differing more or less in their views, laid before the reader, without either note or comment? It is all fair and proper for the writers of essays in cyclopædias or dictionaries of medicine, to collect together the various theories and opinions entertained on the subject about which they write; but even from them we expect some digest of these theories, and we look to them for some new matter, the result of their own experience. But we cannot understand the principle of any physician sending forth to the world a book made up of the sayings of Dr. This, and the remarks of Dr. That, and calling his work an essay on a certain class of diseases.

And this Dr. Bartlett has done. Let us take, for example, the very first section on the febrile symptoms of periodical fever,—and we assure our readers that we do not select an exaggerated specimen; every page we open is of a similar character:

"The formal commencement of the disease is nearly always marked by a distinct rigor or chill. This varies in severity and duration in different cases; sometimes it is slight and transient, at others it is extremely severe, prolonged for two or three hours. Senac says: 'The chilly fit puts on a variety of forms; sometimes, for instance, beginning at the feet, at other times about the scapulæ, and again in the back, it runs through the whole body in a manner resembling small streams of water, poured irregularly in every direction.' According to Dr. Boling, the initiatory chill is generally slight; sometimes it is a well-marked ague, while at others it consists merely in a sensation of coldness, felt especially when the patient turns in bed, or in any way disturbs his covering. In some cases there is only a single chill, in others the chill is repeated, usually with diminishing severity, once, twice, three times, or more, in the course of the disease. Dr. Boling says: 'Where the attack is purely remittent from the beginning, a second well-marked ague hardly ever occurs; though, in all cases, whether the first exacerbation was ushered in by an ague, or merely by slight rigors, a recurrence of the latter, in a very slight degree, frequently precedes the second and third, and occasionally even the fourth and fifth exacerbations. Where the fever is of the double tertian type, the first and third, and perhaps the fifth exacerbation may be ushered in by tolerably distinct agues, while the second and fourth may be preceded by but the very slightest sensation of coldness, if any.' Dr. Stewardson says: 'The recurrence of the chills was subject to great diversity; either there were none after the first, or they recurred at intervals most commonly of twenty-four or forty-eight hours, for the first few days, and then disappeared altogether, or again reappeared towards the conclusion or during convalescence; or finally shewed themselves, at various intervals, throughout the whole course of the disease.'

"Dr. William Currie says: 'After the second paroxysm, and sometimes after the first, the fever is seldom preceded by a cold stage.'"—p. 307.

But what need we of proofs? Hear the *Author's* own confession in the first chapter of the fourth part,—that on yellow fever; headed, *Preliminary Matters:*

"Sect. I.—*Introductory.* As I wish to be always on honest and fair terms with my reader, I shall commence this fourth and last part of my book by informing him that I am not personally familiar with the subject of which it treats. I have never met yellow fever at the bed-side; I have had no opportunities for direct and clinical study of the disease[!]"—p. 410.

And yet he undertakes to write an essay on it, extending to 125 royal octavo pages.

Amongst other new matter, Dr. Bartlett has added to his second edition a bibliography of the different fevers described. It is very defective, and is executed with the very worst taste, containing random remarks on the different authors whose works are mentioned, which, we regret to say, are anything but creditable to his pen. Let our readers judge from the following specimen:

"'*Results of an Investigation respecting Epidemic and Pestilential Diseases, &c. By Charles Maclean, M. D. London*, 1817. 2 *vols. pp.* 1016.' My only motive for including this work in my bibliography of yellow fever is to guard my readers against buying or attempting to read it. In all medical literature it would be difficult finding a noisier, emptier, or more arrogant, egotistical, and puppyish work than this."—p. 528.

One other blemish in Dr. Bartlett's book we feel compelled to notice, as calling for our strongest reprobation. It is the introduction of a scene narrated by Dr. Lewis in the New Orleans Medical Journal, as illustrative of the state of the mind and physical powers in yellow fever. The scene is one of the grossest immorality, and described in the most filthy and disgusting language; nevertheless Dr. Bartlett introduces it with the following observations:

"Our picture of yellow fever would be altogether imperfect and unfinished without the introduction of certain dark and fantastic shadows, which come in more appropriately here than anywhere else. To leave them out would be like omitting the grinning and horrible shapes from one of the witch scenes of Teniers."

He then goes on to describe the augmented sexual desire which often characterizes the advanced stages of the disease,

and in illustration quotes Dr. Lewis's story, to which we have above referred,—one, the bare allusion to which is, we think, almost a pollution to our pages. We cannot trust ourselves to say more on this subject; but we sincerely regret that Dr. Bartlett did not consult more the dictates of common decency, not to say of religion, than to disseminate, by means of his book, such an insult to the admittedly pure character of the medical profession.

The Cholera not to be arrested by Quarantine; a brief Historical Sketch of the great Epidemic of 1817, *and its Invasions of Europe in* 1831–2 *and* 1847. *With practical Remarks on the Treatment, preventive and curative, of the Disease.* By GAVIN MILROY, M. D., &c. London, Churchill. 1847 Pamphlet. pp. 51.

Zur Pest-und Quarantainefrage. Von Dr. KARL LUDWIG SIGMUND, K. K., Primar-Wundarzte in allgemeinen Krankenhause in Wien, &c. &c. 1847. ss. 31.

On Plague and Quarantine. By Dr. KARL LUDWIG SIGMUND, Senior Surgeon in the General Hospital at Vienna. 1847. pp. 31.

Researches into the Pathology and Treatment of the Asiatic, or Algide, Cholera. By E. A. PARKES, M.D., London, Assistant Physician to University College Hospital. London, Churchill. 1847. 8vo. pp. 250.

THE first of these works is a most timely, sensible, and well-written essay, from the pen of Dr. Milroy, whose observations on quarantine and the plague we have had recently to notice in such favourable terms. This *brochure* owes its origin to a review by the Author of some works on the subject, in a recent number of the late Medico-Chirurgical Review. It is now reprinted with many valuable additions, and is likely to prove acceptable, not alone to the profession, but to the public, when such well grounded apprehension exists as to the speedy invasion of this pestilence.

Our Author adopts for his motto, indeed for his theme, the admirable observation of Mr. Farr, the Registrar-General of Deaths in England, in his last Quarterly Report, that "internal sanitary arrangements, and not quarantine and sanitary lines, are the safeguards of nations against the invasion of epidemic diseases." He argues most powerfully in favour of the non-contagious character of cholera, admitting that, under certain un-

salutary circumstances, the disease may, like all others, become infectious; but even then infection acts but an occasional and very subordinate part in the diffusion of the epidemic.

Dr. Milroy deduces many of his arguments, as regards the probability of a visitation of the disease, which since last summer has been devastating the East, to the British Islands, and as to its purely epidemical character, from the history of influenza, its *avant-courier* and analogue. His proofs as to the similarity of the two diseases in their mode of diffusion, and "consecutive affinity" are carefully collected, and, we think, completely unanswerable. And no one ventures to assert that influenza is contagious, yet some are still found to state that cholera is so; wherefore, we even now hear of proposals of more strict quarantine regulations and sanitary lines, to keep off the approach of a pestilence which is carried on the wings of the air; while the only true preventives,—the cleansing of towns and cities, and the purification and ventilation of the habitations of the poor,—*the internal sanitary arrangements* of Dr. Farr,—are to a great extent overlooked. In all epidemic diseases, "the mortality is invariably commensurate with the filth and destitution of the inhabitants, and the impurity of their abodes."

And this duty, we assert, would be a much more legitimate —certainly a much more patriotic and useful employment— for a Board of Health, than that of seeking out bad precedents for the degradation of the profession of medicine, by the ancients thought not unworthy of the Gods, to the level of the mechanic working for his *daily* hire. We fervently hope and trust, should our island be unfortunately again visited with the cholera, that the Government will see the propriety of appointing a Board of Health, such as we had in the year 1833, and which is described in a note at p. 528 of our last volume, and thus give the country the advantage of having its sanitary arrangements under the control of a body which will pay some slight attention to the indignant cry of our profession, which has now resounded throughout the length and breadth of the land.

The position of Austria, bounded for a great extent by Turkey, and open to the east by the great water-course of the Danube, has naturally led to its present system of quarantine,—a system the most perfect and extensive of its kind which has ever existed. When this system was first established the intercourse with the east was comparatively small, and the Tartar and Turkish races were at deadly enmity with the nations of Europe, and, consequently, it answered the purpose for which it was instituted. But in modern times, when steam naviga-

tion has brought every part of the west of Europe in close contact with all parts of the east, and that no bad results have ensued from this intercourse, people have naturally been led to suspect that the precautions of Austria and Russia to keep out the Asiatic epidemics are useless. This opinion generally prevails in England and France, but, as may be expected, the terror produced by sad experience still operates on those near the sources of the danger. However, even in Austria, the value of the system is now doubted by many, among whom Dr. Sigmund has been the most indefatigable in his endeavour to bring about some reform. In the pamphlet specified in the heading he has noticed the principal features of the question in reviewing Dr. Max. Heiné's *Bertäge zur Geschichte der orientalischen Pest.* He looks upon the reform of the whole system as of the greatest importance to the commerce and social relations of eastern Europe, as well as to the civilization of those countries bordering that part of the continent. The present system, while it certainly does not offer any effectual barrier to the plague, totally destroys trade. Paget, in his Travels in Hungary, states, that the nobles of Transylvania boast of having persons in their service who will at any time smuggle silks, salt, &c., across the Turkish frontiers; in fact, like all statutes, the system looks well on paper, but when closely examined it is found not to answer. Dr. Sigmund appears to agree, in general, with the opinion pronounced by the French Academy of Medecine on the subject of plague in 1846: that the plague propagates itself through the atmosphere, but not by contact, and consequently is not contagious; clothes, merchandize, &c., do not propagate the plague by contact, and do not form centres of infection; the infected alone form such centres, and in this way propagate the plague through the atmosphere; and, finally, that the period of incubation never exceeds eight days. He is, however, of opinion, that it is premature to come to any conclusion on a subject so little known, and about the pathology of which we know next to nothing. He has suggested a mode of supplying this deficiency in our knowledge, which we think is very well worthy of attention, it is, that a commission be appointed, composed of physicians from the different nations of Europe, who would study the various epidemic diseases at their sources in Asia, and thus place a cordon around the true source of the evil, much more effectual than any which Austria, or any other country, can ever hope to establish about their own frontiers.

Dr. Parkes, who had an opportunity of witnessing the disease in India, in the capacity of assistant surgeon in one of

Her Majesty's regiments, also takes the same common-sense view of the non-contagious character of cholera, and of the injurious working of quarantine laws. The two epidemics which furnished him with materials for the excellent practical treatise before us, afforded numerous illustrations on these points. The first of these epidemics occurred at Moulmein, in the Denasserim provinces, and lasted from September, 1842, to July, 1843. The second occurred at Madras, and was of much shorter duration, lasting only from the 19th of June to the end of August, 1845. In the epidemic at Moulmein the disease prevailed in one part of the town for months before it invaded another, although there was not the least restriction on inter-communication between the two, and the only reason that could be assigned was, that the part first attacked is nearest the river, and is the lowest, dampest, and most thickly populated quarter. A prevalence of a certain amount of moisture in the atmosphere seemed, in these epidemics, to have been the most constant meteorological phenomenon which accompanied the spread of the disease. We thus find, that at Madras the cholera was heard of at a station ninety miles off, and in a few days afterwards it appeared at Madras itself, a certain degree of moisture being apparent in the atmosphere, and a wind blowing directly from the station where it had first occurred; moreover, the disease attacked "chiefly, or exclusively, the towns and villages stationed in low marshy places, on the banks of rivers, or on the shores of the sea." This fact was so well known to the Burmans, through whose district the epidemic of 1842–3 was very prevalent, that, according to Dr. Parkes, directly the first death occurred in any village, the men deserted their fishery or their paddy fields, and betook themselves to their endless forests, universally stating that,

"Though they were left without food by this flight, and were exposed to the burning noon-day rays, and to the heavy tropical dews at night, *yet cholera invariably left them after the second or third day's march inland.*"

In both Dr. Parkes' and Dr. Milroy's Essays we find excellent and judicious observations on the treatment of cholera, a perusal of which we strongly recommend. For the present we do not intend to comment on the remedies that have been proposed or employed in this disease, but we purpose to take an early opportunity of laying before our readers an account of the additions to our knowledge as to the treatment of this disease, which the time that has elapsed since the great epidemic of 1832–3, and its recurrence in the east, have afforded.

1. *An Essay on the Use and Abuse of Restraint in the Management of the Insane; written in competition for the Prize of Sir Edward Sugden.* By Hamilton Labatt, A. B., T. C. D. Dublin, Hodges and Smith. 1847. pp. 76.
2. *Essay on the Use and Abuse of Restraint in the Management of the Insane, which obtained the Prize offered by Sir Edward Sugden in the Year* 1846. *Unpublished: the Manuscript lying in the Royal College of Surgeons, Dublin.* By D. Mac Adam, M. D.
3. *On the Construction and Government of Lunatic Asylums and Hospitals for the Insane.* By D. Conolly, M. D. London, Churchill. 1846. pp. 183.
4. *Report of the Commissioners in Lunacy to the Lord Chancellor. Presented to both Houses of Parliament.* 1847.
5. *The Consciousness of Right and Wrong; a just Test of the Plea of partial Insanity in Criminal Cases.* By C. Lockhart Robertson, M. D. Edinburgh, Black. 1847. pp. 19.

The painful details of the by-gone suffering and mismanagement of mad-houses,—the many puzzled and mystified attempts of Judges and juries to make out the difference between crime and insanity,—and the numberless discussions and meditations of divines, poets, philosophers, and physicians, to explain madness,—have given a degree of interest and popularity to the subject, which seems to be augmenting in proportion as time runs on, with nothing done to enlighten our ignorance as to its nature. We cannot even boast of the possession of a definition of the disease. Shakspere could not make one; and Esquirol, in his last great work, which contains almost the totality of our knowledge of morbid psychology, makes no attempt to give one. We have elaborate descriptions of the various forms which the disease assumes, and the empirical attempts which have been made to combat them; but this is all. The whole of our knowledge, in regard to the pathology and therapeutics of the disease, amounts simply to an argument in favour of the "Young Physic" scepticism.

The Latin poet said: "Nemo mortalium omnibus horis sapit." This is a homely fact; and one that embarrasses and perplexes all attempts to draw the line of demarcation between mental health and disease. It is true of all classes and kinds of minds, genius itself not excepted; and was an anticipation of the celebrated opinion of Haslam, expressed at the well-known trial relative to the lunacy of Miss Bagster, in 1832:

"I never saw any human being who was of sound mind. I presume the Deity is of sound mind, and *He* alone."

Spurzheim, Burdach, Professor Lordat of Montpellier, and many others, have maintained that genius differed from madness, and every other mental quality, in being spontaneous in its origin, and non-transmissible in the way of generation. To use the very beautiful expression of Professor Lordat: "Geniuses are foundlings, and childless." An appeal to facts, however, seems to shew that genius really possesses no such super-excellent and peculiar attribute, and that it is equally transmissible and hereditary with madness, or any other mental quality or condition. The family of Cloebylus could number no less than eight tragic poets. The Roman families of Hortensius and Curis were distinguished by the possession and transmission of the oratorical power. The family of our own Lord Chatham is another instance. The persistency of genius in the family of the Medici is well known. Madame de Stael, Hypatia, and Areta, were the daughters of philosophers. The father of Mirabeau was a man of genius. The father of John Flaxman, the sculptor, was an eminent modeller of figures in plaster; and Albert Thorwalsden was the son of Golskalk Thorwalsden, a talented sculptor. The father of Raphael, and the mother of Vandyke, were distinguished artists. And Beethoven and Mozart were the sons of musicians of high reputation. When it is considered that genius is scarce, and that, consequently, the field of observation is limited,—and, moreover, that no mental quality is constantly and without exception hereditary,—it must be allowed that genius, like the virtues and vices, is hereditary, and subject to the same laws of transmission.

We cannot define insanity: nevertheless, Judges and juries are constantly being called upon to distinguish between crime and madness. The dilemma is a very serious one, calling for an anxious and profound investigation and modification of the law of our land in regard to it. In June, 1843, the English House of Lords applied to the Judges of the law Courts for a legal definition of insanity as a plea in criminal cases. The definition or rule given must be considered as vague, unsatisfactory, and far from being based upon all our psychological facts. They affirmed that the *consciousness of right and wrong rendered a man responsible for his actions.* Certainly this was a most narrow-minded decision,—totally inadequate to the demands of humanity,—altogether inconsistent with our knowledge of the principles of human action,—and one regarding which Lord Brougham has observed, that "juries do not really comprehend what is meant by the question." It is a well-as-

certained fact, but one which has not yet entered into the calculations of our lawyers, that the consciousness of right and wrong may remain intact, at the same time that an individual may be deprived of the liberty of will: the power of *choice* over actions. This fact must form the base of every legal rule which pretends to protect the afflicted and punish the guilty. To give comprehensiveness and human precision and accuracy to the rule of the fifteen Judges, we think it should have been framed thus: "The consciousness of right and wrong renders a man responsible for his actions, *provided always that he retains the power to choose the right and avoid the wrong.*" Such a formula as the above would, in a measure, meet the demands of humanity and science, and introduce into our Courts of law a recognition of what must inevitably come some day,—moral and instinctive insanity,—as pleas for acquittal in criminal cases.

Dr. Robertson observes :

"The law of England does not recognise the existence of instinctive insanity. According to the answer of the fifteen Judges, nothing can justify a wrong act except it be clearly proved that the party did not know right from wrong; and it cannot be doubted that the admission of the plea of an insane impulse, in a mind apparently (both intellectually and morally) sane, as a justification of crime, would deprive punishment of much of the fear and control which it now exerts over the vicious. The undoubted existence, however, of instinctive insanity, is recognised by every writer upon insanity, and the consequent possibility of man's vengeance in such a case, following Heaven's visitation, must ever render it a matter of deep and serious consideration for our juries and Judges, whether parties accused of capital crimes be amenable to a human tribunal, or be responsible only to a higher power."

An individual possessing a healthy moral constitution can *choose* whether he will or will not commit a crime. But it is the leading feature of insane impulse that the power of choice is in abeyance, and the unhappy being commits crime from *necessity.* The Code of the French exhibits a degree of scientific and humane accuracy and comprehensiveness in this matter, which our own legislators would do well to study. It imperatively demands, in order to establish the charge of criminality in any case, that the accused be in possession of a perfect moral constitution; and should he labour under any mental defect or alienation involving the suspension of the freedom of the will, and proved to exist at the moment the crime was committed, punishment cannot be inflicted.

In legislating upon insanity it will be necessary to consider how far the voluntary insanity induced by drunkenness dimi-

nishes the responsibility for crimes committed in that state. The amount of infamy perpetrated during drunkenness is fearful; but how far we are justified in punishing the acts which flow out of this condition, while we allow the condition itself to pass unpunished, is a question which we have no inclination to enter upon.

Although insanity is a subject that we know so little about, there is abroad, happily, a spirit of inquiry, and craving for information regarding it which we confidently expect will soon project a ray of light which will not only enable us to explain the poetical paradox about the "thin partitions," &c., but, what is of greater importance, will give us an insight into the pathology and therapeutics of the disease, in regard to which we know nothing that can be depended upon.

In order to give an impulse to research, Sir Edward Sugden, late Lord Chancellor of Ireland, with laudable public-spiritedness, gave lately as a sum of money to the Irish Colleges of Physicians and Surgeons, to be distributed in prizes for the best essays upon Insanity and its collateral subjects. One of these prizes was gained by Dr. Williams for his Essay upon the Means of inducing Sleep in Madness, and to this we have already referred in our fifth Number. Last year the College of Surgeons had the management of the competition. The subject proposed was, "The Use and Abuse of Restraint in the Management of the Insane." Four essays were presented, and Dr. Mac Adam was the successful candidate. Unfortunately, however, the glory of his achievement has been in a measure obscured by some alleged violations of the conditions regulating the competition. The fairness of the award has been much canvassed, both by the losing competitors and by the Fellows of the College; the judges having since acknowledged that they *inadvertently* committed an error in making the award in the face of circumstances which disqualified the candidate they had selected. Mr. Labatt, who was one of the unsuccessful competitors, and whose essay forms one of the subjects of our remarks, states in his Preface, that one of the grounds of objection to the selection made was founded

> "On the circumstance of the candidate whose essay was selected having disclosed his name by making 'a communication' to one of the adjudicating body *previous* to the final decision; which was also reported in the same official document, and further corroborated by a public reply given by one of the Fellows to that effect at the annual meeting, by the gentleman who received the 'communication.' The gentleman, however, to whom the communication was made did not vote on the occasion."

Dr. Mac Adam has not published his essay. It remains,

however, as a public document, open to the inspection of the Fellows of the College.

The competitors for this prize are not agreed as to what is to be regarded as the use and abuse of restraint. Mr. Labatt advocates the total abolition of mechanical restraint; assenting, like Dr. Conolly, to the proposition of Mr. Hill, of the Lincoln Asylum, that, "in a properly constructed building, with a sufficient number of suitable attendants, restraint is never necessary, never justifiable, and always injurious, in all cases of lunacy whatever." Dr. Mac Adam, the successful competitor, holds, on the other hand, that mechanical restraint is justifiable in certain cases, but that care should be used to make it as little irksome as possible, and to continue it no longer than is absolutely necessary. So far we are willing to coincide with Dr. Mac Adam; but when he prescribes mechanical restraint as a *penal* rather than as a preventive and remedial measure, in cases of insane impulse to the commission of criminal acts, we think that he takes a narrow-minded view of the actual condition of, and powers possessed by, such patients. He overlooks the fact that the crimes of the morally and instinctively insane are involuntary, and that, to visit them with penalties and pains is cruel, unscientific, and useless.

The debate upon the comparative merits of the restraint and non-restraint systems of practice of the present day, about which so much time and talent have been expended, we cannot but regard as a mere quibble, which has been agitated, exaggerated, and caricatured by over-sensitive benevolence, and refined and timid prejudice. What is the restraint system of the present day as practised in all the continental asylums, and in most of the leading asylums of our own land? It may be stated in the following terms: that, inasmuch as lunatics do occasionally present the awful spectacle of the consentaneous supremacy of destructive impulses with abeyance of moral liberty or control over the actions, forcible means must be resorted to to prevent the gratification of the impulse in question; and inasmuch as the judicious use of ingenious mechanical contrivances is more humane, certain, constant, and less painful in its operation than the hands, vigilance, and forcible control of attendants, the treatment by mechanical restraint is to be preferred to the living restraint of attendants. And surely there is nothing in such a proposition to call up so much cavil and warm animadversion as the advocates of the opposite view have been in the habit of putting forth. Moreover, in discussing the question, they have constantly identified the modified, the enlightened, the kind and necessary restraint of

the present day, with the dreadful details of mismanagement of the days when Pinel and Esquirol began their labours of love and pity. And the public, thus misled, have learned to associate the word *restraint* with every species of suffering and barbarity, and to see an approach to Utopia in the doctrine of non-restraint; little thinking that in avoiding Scylla they are rushing upon Charybdis. Mr. Labatt's essay is full of illustrations in point. The physicians of the continental asylums are unanimous in regarding the restraint system of the present day as the most humane and best. M. Fabret says: "For those who know the insane, non-restraint is a fiction,—a simple substitution of one means for another." We restrain a fractured limb with bandages and splints, to avoid the mischiefs that would accrue from involuntary movements. The arms of madmen are equally subject to involuntary movements, and of a most deadly kind ; and whether shall we control these movements with mechanical contrivances that are always vigilant and never passionate, or with the hands of attendants that may, have been, and are, the reverse of these. Let each curator of the insane anxiously consult his conscience in this matter. In our last extended review of the Lunacy question, we quoted from Dr. Stewart's admirable Report of the Belfast Asylum an extract which fully expresses our ideas upon the subject, and to which we would again refer our readers. (See No. III. for August, 1846, p. 146.)

No doubt it is humiliating to see an individual mechanically restrained; but is not the disease calling for it much more humiliating? If a physician feel, as we have often felt, that in particular cases he is more likely to succeed in preserving life by the use of mechanical restraint than without it, let him apply it. It is better that a thousand lunatics should suffer a certain degree of unnecessary restriction than that one life should be lost. And let not Dr. Conolly again affirm, as he did in his Letter to Benjamin Rotch, Esq., that an asylum was "*disgraced* by the introduction of a single strait-waiscoat?" Was this a becoming homage to the system and the labours of the great and good Pinel and Esquirol? If we examine the details of the two systems it will be found that they differ very little from each other ; the only difference, in fact, consisting in the mode of treating *two* or perhaps *three* patients in an asylum containing from six hundred to a thousand. See what the difference really amounts to. Dr. Conolly does not hesitate to restrain the feet by padlocking boots upon them, when patients cannot be induced to keep them on by any other means. He does not hesitate to restrain the head by locking it in a case,

to prevent the poor patient scratching an irritated scalp. Nor does he hesitate to encase the whole body in a "well-made, well-padded, *well-secured* dress, and a pair of soft gloves without divisions for the fingers and thumb, if the patient be so frantic as to bite his flesh."(*a*) He does not, however, *restrain the arms specially. Voila tous!* We ask candidly is this insignificant difference in the treatment of so small a number of lunatics as require any restraint at all, according to the restraint system, worthy of all the noise and cavil that have been raised about the high-sounding words *Restraint* and *Non-restraint.*

There is, however, another species of restraint which we would joyfully go the whole length with Dr. Conolly in abolishing, and that is the restraint, not of leather, but of asylum matrons; applied—not to madmen, but to mad Doctors. Dr. Conolly himself seems to have worn these fetters inconveniently long; and now, at length, escaping from the restraint which gallantry saddles upon every man, he openly tells the tale of his hardships. When matrons know their places, and confine themselves within their proper bounds, without seeking to oppose and embarrass the physician in the carrying out his plans for working the asylum committed to his charge, they are very useful officers; but, unfortunately, this class of ladies cannot suffer to be directed or governed; they are generally women of education and shrewdness, combined with exalted ideas of their own importance and powers, and they will insist upon criticising, modifying, and disregarding almost every arrangement made by the physician, to the infinite confusion and discredit of the whole proceedings of the establishment to which they belong. In the Continental asylums there are no matrons. The duties are discharged by head attendants merely, who receive their orders from the physicians and house stewards. In most of these asylums the *Sœurs de Charité* occupy these offices, and the system works well. Dr. Conolly, who will, no doubt, feel the infinite superiority of such a system over our own, observes:

"The matron of an asylum is usually chosen by the governing body; but it is a great evil in an asylum when this officer is made of too much importance, and led to consider herself independent of the physician, and has the power,—by sending away the attendants on his female patients, choosing others without reference to him, and moving them from ward to ward,—to interfere in the most direct and mischievous manner with highly important parts of his treatment. A matron to an asylum may be a valuable auxiliary to the

(*a*) Lancet, 1st November, 1845.

medical officers, and the means of doing much good, of which I have had some personal experience. But matrons are generally spoiled as auxiliaries to the medical officers, by a pardonable bearing to female influence on the part of all committees, who are pleased with the studious deference apparently paid to their opinion, and really paid to their power."

And now let us attempt to make a few observations with a view of rescuing the great Cullen from some degree of violence done to his fame and discrimination by Mr. Labatt. In opening his melancholy detail of the former sufferings endured by lunatics, he observes:

"We cannot but entertain a feeling of incredulity and amazement, that a method so opposite in its character, and so revolting to humanity, should for a moment have been sanctioned, not only by the ignorant attendant and official, but by the weight and authority of the learning and experience of the day. Of the truth of this the writings of Cullen afford us melancholy evidence. Alluding to the treatment of insanity, he states: 'In most cases it has appeared to be necessary to employ a very constant impression of fear, and therefore to inspire them with the awe and dread of some particular persons, especially of those who are constantly to be near them. This awe and dread is, therefore, by one means or other, to be acquired; in the first place, by their being authors of all the restraints that may be occasionally proper; but sometimes it may be necessary to acquire it even by stripes and blows. The former, although having the appearance of some severity, are much safer than strokes or blows about the head(*a*).'"

This isolated paragraph, from the writings of Cullen affords us anything but a fair estimate of his method of treating insanity. In his work upon the "Derangement of the Intellectual Functions," he appears to better advantage; and his advice, in regard to treatment, amounts almost to an anticipation of the benevolent and enlightened views of Pinel, which were promulgated some time afterwards. Indeed, some have conjectured that Pinel caught the first idea of his philanthropic reform, whilst engaged in making a translation of Cullen's works. It is an interesting fact that, in the first century of the Christian era, the treatment of insanity was equally benevolent and enlightened with that of the present day. Fifteen centuries afterwards the disease was attributed to sorcery, the incarnation of demons, and all kinds of supernatural influences! At that time were ushered in and perpetuated the revolting practices that have just been swept away. Now Cullen was un-

(*a*) Works of William Cullen, edited by J. Thompson.

doubtedly the first physician of modern times who revived the good old method, and recommended that lunatics should be indulged with the greatest possible amount of liberty. He says, in the work above cited, "that it is necessary to control the rage and violence of maniacs; but it should be done in a manner the least painful to them; and that a strait waistcoat is the best means that has so far been contrived. We should seek to act upon their minds by fear, and *rewards* and punishments; *and they should be allowed to walk about at their pleasure.* Some maniacs have been cured by fixing their attention upon some continuous and even rude labour. The forced attention which occupation requires is a very sure means of breaking the morbid chain of ideas. But mania must be considered as differing in different cases, the treatment requiring to be modified and regulated accordingly." Cullen also thinks that "one may *sometimes*, but very rarely, derive any good effects from corporal punishments." M. Trebat, in his *Recherches Historiques sur la Folie*," gives a similar sketch of the views of Cullen, in regard to madness. Cullen is really worthy the imitation, rather than the censure, of Mr. Labatt.

We remarked above that, in the first century, the treatment of insanity was not at all less enlightened and benevolent than it is at the present day. The following translation from the works of Cælius Aurelianus, who follows the views of Soranus, will shew this in a most interesting and instructive manner:

"Maniacs ought to be placed in a situation moderately heated and lighted, and noiseless. No painting should ornament the walls of their habitation; the air should enter by high openings. They should be placed upon the ground floor, to prevent suicide by precipitation. If they are so excited as not to be capable of using a bed, they must be provided with straw, well chosen, prepared, and separated from all hard substances. They should be visited by strangers as seldom as possible; and the attendants should be instructed to endeavour to repress the vagaries of the patients, mildly yet firmly; letting them see that their faults have been observed; using at one time an indulgence, at another a reprimand, accompanied with a statement of the advantage that would result from better behaviour.

"If the excitement of the patient tend to a dangerous result, it will be necessary to engage a certain number of attendants to control the movements of the patients. If the sight of the men produce irritation, and only in very rare cases, we must resort to mechanical restraint, but with the greatest precautions, and with all gentleness, covering all the articulations carefully to avoid injuring the skin, *for the means of restraint, used without care and manage-*

ment, augment fury instead of allaying it. We should observe with great care the form of the insanity, and resort to the salutary influence of moral impressions, of cheerful ideas, and novelties for giving pleasure and recreation. If the disease be obstinate, the head should be shaved. They should be questioned and conversed with, yet without fatiguing them. This, together with reading, are means for subduing restlessness of body. After reading, they should engage in *theatrical representations*, which are well adapted for dispelling sadness and frivolous fears."

He even goes the length of pointing out the distinction between the real persistency of the malady, and some symptoms which amount merely to the natural influence of the law of habit. This last observation is very remarkable and startling. The same idea was recently expressed in conversation by M. Guislain to the late Dr. Andrew Coomb, who obviously thought it an original observation, from the manner in which he alludes to it in his "Principles of Physiology applied to the Preservation of Health," &c.

Influenced by the conscientious conviction that to treat certain desperate and intractable cases of insanity by the use of mechanical restraint, and to apply it also to lunatics when they suffer from grave bodily disease, requiring the horizontal position, and as little expenditure of muscular power as possible, is most wise and most humane,—we now suggest a new means of restraint, which we have found of easy application, little irksome to the patient, and secure when applied. The object to be attained is to prevent flexion of the fore-arms; and we attain this end by making the sleeves of a jacket or bed-gown of stout leather. When this is applied the arms remain extended, but there is perfect freedom of motion at the shoulder joint, and the body itself is unembarrassed by any means of constraint whatever. The cylinders of leather forming the sleeves of the restraint dress are large and roomy, and exert no pressure whatever upon any part. It is obvious that with such a dress on, a patient may be allowed liberty to roam about, and yet be incapable of doing violence to himself or others. Although there is freedom of motion at the shoulder-joints, persons prone to suicide could not reach the head and neck, owing to the want of flexion at the elbow: violence to others is prevented at the same time, seeing that little force can be exerted with an extended fore-arm.

We have had experience in both the restraint and non-restraint methods; and we candidly confess that after having seen a lady struggling for hours against three stout nurses, who were deputed to hold her *per vim* in bed, the weight of the

bodies of the whole three having been at times suffered by her; and after having seen a gentleman confined in bed by four men,—the excitement rising at times so high, from the fear that these men intended to murder him, that the whole four have been obliged actually to lay upon his body at once to control his motions;—we cannot understand how men can be blinded to the utility, the wisdom, and benevolence of using mechanical restraint. In a recent conversation which we had with M. Voisin, when we visited the admirable asylum at Vamure, in the neighbourhood of Paris, conducted by himself and M. Fabret, he remarked: "I would apply mechanical restraint to my parents in certain forms of madness, convinced that it would be the only method of treating them kindly. The sight would, no doubt, be harrowing to my feelings, but it is necessary for us to be benevolent with the *head* as well as the *heart!*"

Dr. Conolly's work is a very valuable contribution to our economic rules for the management of asylums. The following calculation of the expense of the different items of consumption for each pauper patient at Hanwell will be found very useful as a standard of comparison,—the diet table of that institution being an excellent one, neither scanty nor redundant:

"The actual cost of provisions for each patient is four shillings and eight pence half-penny per week. If it is gratifying to see what can be done for the comfort of insane patients by this sum, it is also well to keep the amount itself in mind, as there are seldom wanting unscrupulous persons who will undertake the whole charge of the insane for a sum scarcely exceeding it. County asylums are consequently first much opposed, and then opened with false expectations; and although everything is done for a time to realize such expectations, and always at the expense of the patients, the delusion at length becomes palpable, and the disappointment of the rate-payers extreme It may be useful, when speaking of this item of expenditure in a county asylum, to mention that the average weekly expenditure for each patient in the Hanwell Asylum, for the quarter ending 31st March, 1846, was, for provisions, four shillings and eight pence half-penny: for house and bedding expenses, one shilling and eight pence farthing; for salaries and wages and maintenance of officers, attendants, and servants, one shilling and eight pence three farthings; for clothing, eight pence; for medicine and incidental expenses, three pence half-penny: the weekly total for each patient being nine shillings and a penny: the annual total £123 2*s.* 4*d.*"

The Commissioners of Lunacy for England and Wales have issued another Report, a large octavo volume, full of statistical

information upon the objects of their care, and combining a review of what the English superintendents of asylums know and practise in regard to lunacy and lunatics. The Commission is thus constituted: Lord Ashley (Chairman), Lord Seymour, Mr. Vernon Smith, Mr. Gordon, Mr. Barlow, Dr. Turner, Dr. Hume, Dr. Prichard, Mr. Proctor, Mr. Mylne, Mr. Campbell, and Mr. Lutwidge (Secretary).

There are three physicians and three barristers, which constitute the Visiting Commission, each visitation being made conjointly by a physician and barrister.

The volume reflects the highest credit upon the Commissioners for the industry and care which they have displayed in going through the details of their office. One of the most startling and painfully interesting facts which they have elicited during their investigations is, that cases of lunatic debtors come within the jurisdiction of the Insolvent Court, and that they may be seized within the precincts of lunatic asylums, and consigned to prison; here is a disgraceful instance:

"The case of Lieut. F. appeared to us to be replete with hardship. In the first place he had been insane, and confined as a lunatic in Haslar Hospital for upwards of twenty years; he was quite blind; he was utterly ignorant of the debt which had been contracted by his wife, who had not only a separate provision for herself, but also nearly the whole of the Lieutenant's half-pay paid over for her support. And, secondly, legal process was permitted to be served upon him at a time when he was quite unconscious of the fact, when, although he had a good defence to the action, he was totally incapable of defending himself, and had no person appointed to defend him. Thus a blind and insane person was eventually cast into gaol in winter, for a debt for which he never was liable. It appears, therefore, that lunatic debtors are deprived of the benefits which the law extends even to criminals!"

This piece of extreme law will not, we feel assured, be allowed to do much more violence to the rights of the afflicted. The enlightened spirit which has now long agitated the cause of the lunatic, and has swept away pain after pain from his miserable and mismanaged person, will shelter him from this, which is among the last of the clamant and glaringly removable calamities which he owes to the mistaken judgments of his sane protectors.

The Report contains a *resumé* of the different methods of treatment carried out in the English asylums. Its details afford, however, a sad picture of the helplessness and poverty of the resources of medicine. We know nothing whatever of the im-

mediate causes or nature of insanity; no wonder, then, that our treatment of the disease should be so uncertain and vague. It cannot be rational; nor do we possess a single empiric remedy. Experience has, however, revealed this fact to us, that the observation of all those hygienic rules which, in healthy individuals, are known to maintain and improve the bodily vigour, is favourable to the re-establishment of mental health. With regard to the moral treatment of the insane the Commissioners observe:

"There is reason to apprehend that the attention of medical men has been of late years too exclusively devoted to what is termed moral treatment, to the neglect, in some instances, of the resources of medicine. They appear occasionally to have lost sight of the fact that insanity never exists without a physical cause, namely, some disturbance of the functions of the brain."

The Commissioners here talk as though they had the power to "minister to a mind diseased." What are the *resources of medicine* here alluded to? A glance through the Appendix (L) of the Report will shew that medicine has no resources wherewith to combat insanity,—we mean, of course, the pure idiopathic insanity,—and not those cases which are apparently symptomatic, with either constipated bowels, gastric derangement, or disturbance of the uterine functions. We have remedies for improving the general health; but the general health may be good and the insanity still remain;—for such cases we have nothing that we can call a remedy. The Commissioners affirm that insanity never exists without a physical cause. How do they know that? Have they never met with cases in which, during life and after death, no physical cause whatever could be detected? In cases where insanity has been suddenly produced by a moral impression, what physical cause has preceded it? Or when sudden restoration to reason has occurred by a powerful moral impression, what physical change has preceded it? It is a mysterious affair. Not so, apparently, to the Commissioners. We are not sure, however, whether we comprehend exactly their meaning, for there seems to be some want of precision about the terms used. They say, "insanity never exists without a physical cause, namely, *some disturbance of the functions of the brain.*" Does not insanity consist in *disturbance of the functions of the brain?*—the cause of which we ask. How then can it be both cause and effect?

All is uncertainty. Is madness a disease of the soul or of the body? Each view has its supporters. All the modern authors upon insanity cite cases in which no physical lesion whatever has been traced as explanatory of the insanity which

the patient suffered from; and M. Heinroth, of Germany, has propounded the following view:

"Madness is the loss of moral liberty. It never depends upon a physical cause; it is not a disease of the body but a disease of the spirit,—a depravity. It is not,—it cannot be,—hereditary, because the thinking *I*,—the soul,—is not so. The temperament and the constitution are transmissible in the way of generation, against which he who is born of parents who have suffered insanity ought to reach, in order to prevent themselves from becoming mad. The man who has, during his whole life, the image of God before his eyes and in his soul, need have no fear of ever losing his reason. It is clear as the light of day, that the torments of the unfortunate creatures called sorcerers and possessed, are the consequence of the exaltation of their remorse of conscience. Man has not only received a limited degree of reasoning power, but also a certain moral force which cannot be vanquished by any physical power, and succumbs only under the weight of his own depravity and faults."

Another German spiritualist, M. Eschenmayer, says:

"All the diseases of the soul proceed from the inferior faculties usurping the domain of the superior faculties, and appropriating their personality. The law of reason always remains pure and complete, and can never be injured in its intimate nature by external agents. But it happens that the secondary faculties revolt against it, and afterwards fall into confusion. This is what takes place in mental alienation."

The phrenologists, on the other hand, give a local habitation to the disease; and if they do not succeed in making themselves useful and satisfactory, they at least have the merit of being intelligible. When Gall first visited Paris, whither his phrenological fame had reached before him, he was conducted every day to *la Salpetière* by M. Esquirol. At first, Esquirol recounted to Gall the histories of the different lunatics whom they saw, and Gall explained, by a reference to the conformation of the head the cause of the malady of each. The conformation of the head, and the character of the insanity were found to be in perfect harmony. So far all was well. But, wishing a further test of the powers of Gall's philosophy, Esquirol requested Gall to observe the conformation first, and afterwards to tell him the character of the malady. Before this test Gall, of course, was struck dumb. This was straining phrenology a little too severely. We believe in much of the phrenological philosophy, but we cannot help feeling astonished that Gall should have so far committed himself(*a*).

(*a*) When Coomb first came over here as a phrenological missionary, he

In a late conversation which we had with M. Leuret, at Bicêtre, from whom we received the above anecdote, he stated it to be his conviction that either there existed no cerebral or physical change as a cause of insanity; or, if there were one, he did not know in what it consisted; that the cerebral lesions found upon examinations of the brains of lunatics explained lesions of the motor power, but were insufficient to explain the mental symptoms.

We are as much in the dark in regard to the pathology and nature of insanity, as we are as to the whereabouts of the "resources of medicine" alluded to in the foregoing censure of the Commissioners.

We have all of us "a vision of our own," as Wordsworth says, and we have our's. In speculating as to the nature of insanity, we feel inclined to believe,—presuming the encephalon to be the seat of the intellectual and moral faculties,—that the primary cause of the disease is as often to be found in the blood as in the structure of the nervous system. That healthy moral and intellectual manifestations demand the contact of healthy blood with a normal nervous system. In fact, we are inclined to look at insanity through the medium of humoralism. Consider for a moment how the mental manifestations are modified by the quality and quantity of blood circulating. Too little arterial blood to the brain produces syncope; too much produces coma. Change the quality of the blood by infusing into it either chloroform, nitrous oxide, ether, opium, henbane, stramonium, alcohol, &c., &c., and you produce true mental alienation artificially. Now we are inclined to believe that there are powers in the human body for generating mania-producing-compounds of equal or greater potency than any of the above, which, circulating with the blood, constitutes the primary cause of the malady. How, then, it may be asked, do moral impressions produce insanity? We answer, powerful emotions can induce the secretion of tears and of urine; they can augment or diminish cutaneous transpiration; they can make the countenance either white or red; suspend or vitiate the secretion of saliva, and perhaps most other secretions; or induce the absorption or promote the deposition of fat, &c., &c.; and why not cause the production, if there be a natural ten-

was shewn over the Richmond Lunatic Asylum, and made many admirable hits, it is said, as to the causes of madness and the previous characters of several of the inmates, by an examination of their heads. In a few years afterwards, when, without knowing it, the phrenologists pronounced Swift's skull to have been that of an idiot, they got out of the dilemma by stating that, indeed, insanity always altered the cranium.—Ed.

dency to the production, of this hypothetical mania-producing agent? In our observations regarding the succession of the phenomena ushering in the monomanias, we see, first, the presence of a given powerful emotion, afterwards morbid ideas are superimposed upon this emotive exaltation,—a series of phenomena agreeing precisely with our hypothesis. We perceive an analogy between fever and insanity. Fever is the result of a something introduced into the circulation from without. Insanity is the result of a something generated *within* the body and circulating with the blood. This peculiar something of fever has a general poisonous influence over every organ of the body. That of insanity, on the other hand, has a circumscribed and local influence,—the encephalon, or even certain portions of it only.

According to the Commissioners' Report, all the physicians of the English asylums use narcotics in the treatment of insanity, with the exception of those at Lincoln, where the use of them has been prohibited,—strange state of things,—by a manager's order forsooth! As remedial agents in insanity we think them useless: they are indicated occasionally for certain bodily conditions occurring in the progress of the malady, but they have no beneficial influence over the mental symptoms: and, if the homœopathic axiom, "similia similibus curantur," be a delusion, it is precisely what we should be led to predict, seeing that by their use we can induce madness artificially in the healthy individual. We will state a few of the numberless facts on record illustrative of this. Chardin states that among the Persians the artificial induction of madness by means of a decoction of poppies is a luxury; and that there are public haunts where this condition is served out to customers. He says that when the applicants for this disease enter the cabaret they are low-spirited and languid. Little by little, as they go on sipping the beverage, they became quarrelsome and enraged; everything displeases them; they repel every body, and quarrel among themselves. By and by, however, the scene changes. The ruling passion of each becomes predominant. The naturally amorous recount the charms of their mistresses. Another, half asleep, laughs from below his cloak. Another makes fun. Another tells ridiculous stories. In a word, one could easily believe that he was in a lunatic asylum. The Persians think that there is something supernatural or divine in this condition.

The historians of the Crusaders tell of one of the scheiks of the Bedouin Arabs, who had the power to inspire his followers with blood-thirsty propensities and courage by giving them

a potion called Hassich, from whence was derived the word Hashishen (eaters of herbs), and from whence we derived our word assassin. Hassich is to this day the name given in the East to the Indian hemp with alternate leaves, which when smoked intoxicates, and gave rise to a quarrelsomeness, and a degree of homicidal madness. Sylvester de Lacy states, that during the occupation of Egypt by the French army, the use of this plant was rigorously prohibited on account of this property(*a*).

The ancient Peruvians, according to Frezier, were accustomed to diagnose the characters and passions of their children by giving them a decoction of the spines of a grass named carapullo, which, he says. resembles the bromus catharticus. This produced a violent delirium which lasted for several days. While in this state they placed before them the tools of various trades, and their behaviour at this time was noted, and considered to be decisive of the capabilities and tendencies of the child. He says that this curious method of moral investigation rarely deceived them. We do not know whether they were equally successful with the phrenologists of our own day in this undertaking.

Pinel states that Kæmpfer swallowed, at a feast in Persia, an opiate composition which is common among them. He experienced an indescribable degree of joy, played ridiculous pranks, laughed excessively, and at the end of the feast mounted on horseback, believed that he was flying through the air above the clouds, circumambulated in imagination the vast circle of the heavens, and thought, in his madness, that he was a guest at the table of the gods. These facts, of which there are great numbers on record, illustrative of similar properties possessed by all the narcotics, coincide with the hypothosis we stated just now, and, moreover, induce us again to ask, where are we to fiud the "resources of medicine" spoken of so impressively by the Commissioners? Fœderé asked the question, "Why does opium act so contrarily in mania?" He answers himself thus: "Because opium always produces reveries in persons in the possession of their senses; it only augments those of persons already carried away by them, as in madness;" or, as he might have said, because the "similia similibus curantur," of the homœopathists, is a delusion.

It is rumoured that a Commission of Lunacy will forthwith be constituted for Scotland. The draft of a bill has already

(*a*) See Lane's Modern Egyptians, Wilde's Narrative of Travel, and Donovan's papers on Indian Hemp.

been published, proposing the establishment of such a corporation, and the speedy introduction of a bill with this intention into Parliament is looked for on all hands. A measure to provide for the establishment of more lunatic asylums in Scotland, or the extension of those already existing, is an obvious and clamant want; but it is a question whether such a Commission appears to be necessary in that country. The Lord Advocate should know that to meddle is one thing, to improve is another. What are the defects of the present system of public asylum management in Scotland, requiring the inspection and regulation of Commissioners? The visitations of sheriffs, and the exertions of private individuals, afford, we believe, all the security that can be desired, that the insane will be judiciously cared for; and the guardianship and watchfulness of these disinterested patrons and governors have produced the present state of perfection in the management of the Scotch asylums. Moreover, the appointment of resident medical governors to some of the asylums, both in Scotland and in Ireland, is, we think, an additional warrant for the proper management of these institutions. The late abuses in the management of the asylums of England called for the appointment of the present Commission of Lunacy, which has done, and is doing, its duty so efficiently.

In adverting to Scotch asylums, we must be understood to speak now of the public asylums only. We are convinced that it is in these alone that perfection of management will be found to obtain any where, whether there be a Commission or not; we should, therefore, like to see all asylums made public. The rights of the lunatic could not fail to be protected under the present system of management pursued in the Scotch and Irish public asylums. Scotland, however, requires a measure providing for the erection of a sufficient number of public asylums; and several additional asylums are just now about to be erected in Ireland.

Practical Observations on Midwifery, and the Diseases incident to the puerperal State. By Alfred H. M'Clintock, M. D., and Samuel L. Hardy, M. D. Dublin, Hodges and Smith. 1847. 8vo. pp. 368.

The case books and documents connected with that noble institution, the Lying-in Hospital of this city, are, of course, the property of the Master, and the right of publishing them rests

solely with him; nor should we regret this, had each Master given us the benefit of his experience in the way Dr. Collins has done in his valuable Report.

The late Master, Dr. Charles Johnson, with his characteristic liberality and kindness, offered permission to his assistants to publish the records of the hospital during their three years of office; two of them, Drs. M'Clintock and Hardy, wisely availed themselves of this permission, and the result is the excellent volume we are about to introduce to the notice of the reader. The work has a value, however, far beyond its mere statistics: it may be taken as the exponent of the *practice* of the hospital under "one of its most distinguished masters;" and it bears the stamp of his acuteness, caution, and sound judgment.

The period embraced in this Report extends from January 1, 1842, to January 1, 1845, during which time 6634 women were delivered in the hospital, of 6702 children. Of the women, 2125 were pregnant for the first time. The deaths amounted to sixty-five, or 1 in every 102, an extremely low rate of mortality in such an institution: thirty-five of the deaths occurred amongst primiparæ; in eleven cases the cause of death was a non-puerperal disease; and four others were in a dying state on admission, which would reduce the mortality to 1 in 132.

The number of male children born in the hospital was

3551; of whom { 198 were dead born, and
62 were putrid.

The number of female children was

3151; of whom { 127 were dead born, and
80 were putrid.

Of the entire number of children 108 were premature, viz., fifty-two boys, of whom nine were dead born, and fifteen were putrid; fifty-six girls, of whom nine were dead born, and twenty-two were putrid.

After giving these general statistics, the Authors proceed to report upon natural, tedious, preternatural, and complex labours, convulsions, rupture of the uterus, twin births, funis presentations, ophthalmia neonatorum, and the management of still-born children. We shall give a slight notice of each of these chapters, merely remarking, previously, that they are remarkably well drawn up, carefully written, and display an unusual acquaintance with the writings of others, together with sound, judicious practical observations.

Under the term "natural labour" is included all those cases in which, according to the definition of Denman, the head pre-

sents, and the labour is completed in twenty-four hours, without artificial assistance. The number amounted to 5852, of which 1752 were primiparæ; sixteen of them (seven of whom were primiparæ) died; four of uterine phlebitis, two of peritonitis, two of phthisis, one of mania, one of arthritis, one of sloughing of the uterus and vagina, one of laceration of the peritonæal coat of the uterus, one of pneumonia and bronchitis, one of scarlatina, one of anasarca, and one from a tumour compressing the trachea.

Of the 5852 women, 3882 were delivered under six hours; 1398 between six and twelve hours; 426 between twelve and eighteen hours; and 146 between eighteen and twenty-four hours. In the entire number we find fourteen face presentations; fifteen with the face towards the pubis; and eight in which the hand descended along with the head.

As the work does not pretend to be a treatise on midwifery, the Authors have limited themselves to noticing a few important particulars in the management of natural labour. No one, we fancy, now doubts the value of the binder, but many seem to be very ignorant or careless in the mode of applying it. We agree with the Authors, that it ought to be applied before the expulsion of the placenta, as is the usual practice in the Hospital; that it ought to extend from the ribs to the trochanter; and that it ought to be applied firmly, and with equal, but not excessive pressure. The observations on supporting the perinæum are excellent. It is a great error to commence our support too soon; "we should abstain from giving any support until the increasing thinness of the part, and the extreme tension of the fourchette, indicate that delivery is near at hand:" the pressure should be directed from behind forwards, less firmly anteriorly, and great care taken not to draw the perinæum backward.

After-pains are best treated by calomel and Dover's Powder, or a full anodyne, followed by a dose of castor oil and turpentine the following morning. Turpentine fomentations are recommended when the pains are troublesome in the day time, or threaten to run on into inflammation. Drs. M'Clintock and Hardy have remarked that the severity of after-pains is generally inversely as the length of the second stage of labour.

In cases of tender nipples the practice of the hospital has been not to put the child to the breast until after the secretion of milk is established, but to rub the breasts, or apply "cere cloth," until the breast shall have become free, and then to permit the application of the child. Among the remedies for sore nipples used in the hospital are mentioned tincture of catechu, the solution of pure tannin, or a favourite lotion of Dr. Johnson's,

consisting of subborate of soda, chalk, spirit of wine, and rose water.

The chapter on natural labour closes with an admirable notices of uterine phlebitis and puerperal mania, which are too long to quote, but which we recommend to the careful perusal of our readers.

The total number of *tedious labours* amounted to 259; of these 173 were delivered without instrumental assistance; but thirty of them got ergot of rye, and ten only of the children were born alive; thus affording distinct confirmation of the remark of Dr. Beatty and others, that ergot does exert a certain amount of deleterious influence upon the fœtus, as in nearly every one of these cases there was evidence of the child being alive at the time of its exhibition. In sixteen cases, delivery was effected by the vectis; in eighteen by the forceps; and in fifty-two by the perforator and crotchet.

"Twenty-two women died out of 259; and nineteen of these fatal cases were primiparous women. Of the children we find that 154 were boys, of whom eighty-three were born alive; and 105 were girls, of whom fifty-six were born alive."—p. 96.

In eighty-eight cases the principal delay was in the first stage; in 119, in the second stage; and in fifty-two cases both stages were protracted. We are glad to find the Authors recognise the importance of distinguishing between delay in the first and second stages: their observations fully bear out the opinion of others, that the danger of delay in the first stage bears no comparison to the danger of delay in the second stage. The cause of delay in the first stage was almost always a rigid, unyielding state of the os uteri; and the treatment in the hospital consisted of tartar emetic, bleeding, and the warm bath.

The second stage was prolonged from various causes: the most frequent were inertia of the uterus, disproportion between the size of the child and the pelvis, or a combination of these two causes. As a remedy for the first of these causes we have the ergot of rye; and the Authors have given us the result of many careful observations on this subject.

The cases in which it was given were those of inert uterine action; those in which, without any discoverable pelvic deformity, the head was arrested at the brim; and those in which unfavourable symptoms calling for delivery manifested themselves, while the fœtal heart was still audible, but where the use of the vectis or forceps was inadmissible, but not from impaction of the head. The pulsations of the fœtal heart were found

to be an accurate test of the influence of the ergot upon the child; when these became diminished in frequency, depressed in strength, or intermittent, it was necessary to have recourse to instruments if the child was to be saved.

In deciding upon the choice of instruments, the stethoscope was found of extreme value, as, if the child be dead, craniotomy is clearly preferable to the forceps. Nor is it less useful in deciding upon the time for operating; for if, after ascertaining that the action of the fœtal heart is natural and regular, we find that in the progress of labour it becomes gradually quicker, weaker, or irregular, we may conclude that no time is to be lost if we wish to save the infant. But we cannot too carefully remember the judicious remark of the Authors, that the diagnostic value of auscultation depends upon *comparative observations*, and not upon a solitary application of the instrument(*a*).

The vectis used occasionally was one blade of the forceps, and it was always employed more as a tractor than as a lever. The short, straight forceps was the only one used, and the conditions were, that the child should be alive, the head have remained stationary within reach of the forceps for six hours at least, the membranes ruptured, the os uteri fully dilated, the ear within reach of the finger and the soft parts free from inflammation.

In all the cases but three in which craniotomy was performed for difficult labour, the Authors were fully assured of the child's death before the operation; and when once convinced of the child's death, "it was not the practice of the hospital to wait for the full development of bad symptoms before using instruments, as nothing could have been thereby gained, and the patient's life might have been compromised by such culpable procrastination."

The total number of *preternatural cases* was 227: 101 of which were breech cases; thirty-seven of these children were still-born, of which twenty-one were putrid; twenty-four were premature, eighteen of which were still-born. Of the 101 children, fifty-eight were males, and forty-three females; sixty-four were born alive, of which thirty-five were boys. Two of the mothers died.

There were thirty-eight footling cases (inclusive of the twin cases): eighteen of the children were dead born, of which thirteen were putrid; fourteen were premature, of which one was

(*a*) See Dr. M'Clintock's observations on the use of the stethoscope in midwifery, in Number VII. of this Journal.

born alive, two dead, and eleven putrid. Of the twenty children born alive, six were boys; and of the entire number, thirteen were boys, and twenty-five girls. One mother died.

There were twenty-six presentations of the shoulder or arm, including six which occurred among twin children: in nineteen cases version was performed, and fourteen children were born alive. In four cases evisceration was performed. Of the twenty-six children, twelve were dead born, of which six were putrid; eight were premature; thirteen were male, and thirteen female. Two of the women died.

The Authors recommend evisceration rather than turning in cases of difficulty, when the child is dead; and in turning they advise the bringing down of one leg rather than both, for reasons which appear to us to be sound and judicious.

The first section under the head of *complex labours* is hæmorrhage, and the subject is not only one of deep interest, but treated in a very able manner. The Authors record thirty-seven cases of hæmorrhage before delivery; twenty-nine of accidental, and eight of unavoidable hæmorrhage; the placenta being partially over the os uteri in five cases, and completely covering it in three cases. Three of the unavoidable cases were delivered by the natural efforts, one by the forceps, and four by turning. Three women died, one from exhaustion, and two latter from phlebitis.

Of the twenty-nine cases of accidental hæmorrhage, in fourteen the membranes were ruptured, and delivery was effected by the natural powers alone: in thirteen the hemorrhage was restrained by other means, such as cold, stimulating enemata, ergot, &c., and labour terminated naturally. In one case the forceps was used, and in one the perforator and crotchet. Eighteen children were born alive, nine dead, and two putrid. Of the twenty-nine women four died.

When the membranes could be felt, in any case of hæmorrhage, they were ruptured; and if the uterine action was inefficient, stimulating enemata, or ergot of rye were given. Turning was rarely called for in such cases.

Drs. M'Clintock and Hardy confirm the statement of M. Naegelè, as to the value of the stethoscope in the differential diagnosis of hæmorrhage; we can also bear witness that in some very difficult cases it has determined the line of treatment. The tampon was used before the os was dilated, and when it was covered by the placenta, great care being taken, at the same time, to guard against internal flooding. No case occurred in which the placenta was expelled before the child, and both Dr. Johnson and his assistants seem decidedly opposed to

its extraction as recommended by Dr. Simpson. Our Authors speak very highly of the effects of opium in uterine hæmorrhage as a general stimulant, subject, however, to the drawback, in accidental hæmorrhage of its power of suspending uterine action. They observe very justly that in operating it is better to introduce the hand wherever it passes the placenta most easily, and this was invariably beside the placenta, between it and the uterus.

Hæmorrhage occurred between the birth of the child and the expulsion of the placenta in thirty-one cases; in ten it was very profuse. In twenty cases the placenta had to be extracted, and five of these women died,—one of exhaustion, and four of uterine phlebitis: none of the others died. In twenty-five cases the hæmorrhage was subsequent to the expulsion of the placenta; two died, one of the effects of hæmorrhage, and the other of uterine phlebitis.

During the period of the Report, twenty-eight cases of retained placenta occurred, in which the hand had to be introduced for its removal; in sixteen it arose from inertia of the uterus; in eleven from morbid adhesion; and in one from hour-glass contraction. Dr. Johnson and his assistants agree with Dr. J. C. Douglass, that hour-glass contraction is a secondary affection. A very wise rule was observed in the hospital with regard to the ergot of rye,—never to give it in retained placenta unless the placenta was completely detached, for the very good reason that, if the placenta were morbidly adherent, it would add seriously to the difficulties.

As regards convulsions, the observations of Drs. M'Clintock and Hardy add confirmation to those of Dr. Lever, that the urine is albuminous. The Authors dwell strongly upon the importance of marking the earliest premonitory symptoms, such as headach, tinnitus aurium, flashes of light, œdema of the face, &c., in order that, by proper treatment, we may prevent these alarming seizures. In all such cases, when the woman was of a full habit, bleeding from the arm, to ten, twelve, or fourteen ounces, was practised, a mercurial purgative was given, and the bowels were kept free. Open air exercise and unstimulating diet were enforced, and if the patient could remove to the country for a time so much the better. When the headach continued, leeches were applied to the temples, or the bleeding was repeated.

"In cases where the predisposition is strong and difficult to eradicate, besides using these remedies, Dr. Johnson is in the habit of giving James's Powder after the following manner: he begins with a small dose at bed time, and continues increasing it every night by

one grain at a time, until it produces some sensible effect, or until the dose amounts to ten or twelve grains, when it is omitted."—p. 266.

In convulsions, also, we have another instance of the value of the stethoscope. By it we may often prognosticate whether the patient will go on to her full time; and during labour, the effect of the convulsions upon the action of the fœtal heart may decide both the time of operating and the instruments to be used. The Report confirms what has been so often remarked, that women are much more liable to convulsions in their first than in subsequent pregnancies; but it disproves the assertion of M. Moreau, that advanced age in primiparæ is one of the strongest predisposing causes of convulsions.

It is worthy of remark, that in three or four women subject to epilepsy, the fits were less frequent and severe during pregnancy, and that they did not seem more liable than others to puerperal convulsions.

The remedies used in this complication were, copious bloodletting, free evacuation of the bowels, tartar emetic, and cold affusion to the head and face, with a guarded attempt to anticipate the uterine or abdominal inflammation by small doses of blue pill.

Thirteen cases of convulsions occurred; ten were first, and three second pregnancies: two of the latter had convulsions in their first labours. In ten cases convulsions came on before delivery, and in two of these they continued after delivery; in three the attack came on after delivery; six were delivered naturally by the crotchet, two by the forceps, and one by the vectis: three cases ended fatally.

The chapter on *rupture of the uterus* is very good; considerable care has been bestowed upon the consideration of the minatory symptoms, and the following is a brief summary. 1. The history of former labours, shewing deficiency of space, as, for instance, the labours having been difficult, the children dead born, or only the females born alive; 2. previous disease, indicated by a fixed local pain, as pointed out by Dr. Murphy; 3. during labour extremely violent pains, with little or no interval; 4. the occurrence of a crampy pain; 5. cramps in the legs, accompanying the violent uterine action. The symptoms which indicate that rupture has taken place are, 1. a sudden and acute pain in some part of the uterus, quite different from labour pains; 2. vomiting, at first of the ingesta, then of a coffee-ground liquid; 3. collapse, debility, and prostration; 4. a distended and very painful state of the whole abdomen; 5. sudden cessation of the labour pains; 6. discharge of blood

from the vagina; 7. recession of the presenting part; 8. the limbs or body of the child discernible in the abdominal cavity; 9. the speedy cessation of the pulsations of the fœtal heart. Into the various modifications of these symptoms, their absence, and their precise value, Drs. M'Clintock and Hardy have fully entered, and we think they have succeeded in placing the subject in a clearer light than it was before.

Nine cases of laceration occurred, and all terminated fatally; two were delivered by the natural efforts, one by the forceps, two by the perforator and crotchet, and four by turning. Eight of the children were boys, all born dead; one, a girl, born alive. One woman died nine hours after the accident, one in fifteen, and one in sixteen hours. Two died on the second day, two on the third, one on the fourth, and one on the fifth day.

During the three years there were ninety-five women delivered of *twins:* two of the mothers died, one of hæmorrhage after delivery, and the other of uterine phlebitis. Of the 190 children, 171 were born alive; in eighty-five first born, and eighty-six second born; ten boys were dead born, and nine girls. In thirty-eight cases two boys were born together; in twenty-two cases two girls were born together; and in thirty-five cases a boy and a girl were born together.

Only one case of triplets occurred, but the authors mention, in a note, a very curious case of an abortion of five fœtuses, which was some years ago shewn to the Obstetrical Society by one of the late Masters of the hospital, Dr. Evory Kennedy.

After the birth of the first child, the practice of the hospital has been, at once to rupture the membrane of the second, and if the presentation be natural, and there be no complication, allowing a fair trial to the natural powers, instead of delivering by turning after a given time. Stimulating injections, and gentle friction on the uterus, were employed and were successful, for in no instance was it necessary to turn and deliver, except one where the arm presented. Of course bad symptoms on the part of the mother, preternatural presentation of the child, or the occurrence of convulsions or hæmorrhage, will require prompt and artificial interference.

Thirty-seven cases of *funis presentation* occurred. In one case of twins the funis descended below the presenting part of each fœtus. Twelve children were born alive, i. e. eight boys and four girls: nine of these presented with the head, two with the feet, and one with the arm. In five cases the funis was returned above the head; one case was delivered with the vectis, and the remaining six were not materially interfered with.

The Authors prefer reposition of the cord when possible, to

delivering by version, as recommended by many writers, because the probability of saving the child is not worth the increased risk to the mother. There are, however, cases in which the use of the vectis or forceps may save the child by hastening the termination of labour.

The work before us concludes by a short chapter on ophthalmia neonatorum, and another on the management of still-born children. In the former we find that the practice of the hospital was to apply one leech at the outer canthus of the affected eye, followed by poultices, during the first stage; and during the second stage, when the discharge has become thick and purulent, the solution of nitrate of silver (first used there, if we mistake not, by Dr. Evory Kennedy), with poultices of meal and water, or of the curd of milk coagulated with alum.

The object of the chapter on still-born children is mainly to direct attention to the value of the stethoscope, and of artificial respiration. We are all aware how deceptive the appearances of still-birth are; how often it happens that a child supposed to be dead is restored to life by perseverance in the use of means; and all must have felt how desirable it is to have some positive test of life and death. This is effected by the stethoscope, applied over the region of the heart. If no pulsation be heard, our efforts will be altogether in vain, but so long as it is audible we ought not to relax our endeavours. In the hospital the attempt to inflate the lungs artificially by means of a large elastic catheter, seems to have been very successful, and the process is described with care and accuracy.

We have now laid before our readers a sketch of the contents of this valuable Report,—sufficient, we hope, to induce them to procure the book and read it for themselves, with the care and attention it so well deserves. It is written in a clear, manly style, with a full knowledge of the subject, and indicating not merely great practical tact and experience, but extensive acquaintance with obstetrical literature. The reference to the labours of others, and the quotations from their writings, are candid and judicious,—amply sufficient, without over-loading the book. To each chapter or section is annexed a carefully compiled table, a summary, in fact, of the cases referred to, not only valuable in itself, but as affording a vast amount of collateral facts for future investigation. We have no hesitation in saying that these tables, taken in conjunction with the more extensive ones of Dr. Collins, constitute the best midwifery statistics ever published.

We congratulate the profession, as well as Drs. M'Clintock and Hardy, upon the publication of this volume; it is of great

practical value to us, and most creditable to the Authors; and in conclusion we heartily wish it the success it deserves.

The Danish Government lately sent a distinguished physician, Dr. Levy, to report upon the merits of the different lying-in hospitals in the British islands. This report (see No. 3, in Books Received), speaks of the management of our hospital in the highest terms.

The London and Provincial Medical Directory. 1848. London, Churchill, pp. 432.

This very useful publication does great credit to its spirited publisher. The first work of the kind which appeared in Great Britain was the "Irish Medical Directory," edited by Dr. Croly, of Mountmelick, published in 1843. We have much reason to regret that that valuable little book did not receive, from the profession in Ireland, support such as it deserved, and such as might have encouraged Dr. Croly to bring out an annual edition. It must be considered, however, that it was a novel experiment; and we have little doubt but that, if continued for a few years by a publisher possessed of sufficient enterprise, and improved from time to time, so as to meet the increasing wants of the Profession, such an annual would ultimately become indispensable to every medical man in this country, and sufficiently remunerative to its proprietor. In order that we may foster the desire for such a periodical among the profession in Ireland, we shall devote a short space to the description of the London and Provincial Medical Directory for the year 1848.

This work constitutes a thick octavo, handsomely bound and gilt, the price of which is eight shillings and sixpence. We mention this, as it is probable that one of half the size would answer for Ireland. The contents commence with a well arranged *diary*, with sufficient space to contain memoranda for every day in the year. The days and hours upon which learned societies meet are distinctly marked in this diary, together with some other matters which it is important to remember. Then comes the London Directory, in which are described the name, addresses, qualifications, appointments, and published works, of nearly every known qualified physician, surgeon, and general practitioner, resident in London and its immediate vicinity. Then follows a very remarkable and important feature in this work, namely a list of persons known to be practising in or about London, who have neglected to send in a return of their qualifications, although repeatedly applied to,

and whose names cannot be found in the published lists of members or licentiates of the various licensing corporations in England. Of course it is reasonable to infer that such persons have no qualifications. After this list is an obituary of the medical men who have died in London during the past year. Then there is a list of the medical referees of the metropolitan assurance offices; and another of the medical periodicals published in Great Britain. The officers and regulations of the various medical corporations, as well as of the various boards which preside over the public medical service; to these are added ample details as to the London schools, hospitals, and dispensaries, and an enumeration of the officers and objects of the various learned societies of the metropolis, concludes the first part of the Directory.

The Provincial Medical Directory commences with a list of the medical practitioners of England and Wales, arranged according to the counties and towns in which they are located. This is a most useful list, because it at once displays the qualifications of those contained in it, under the head of each locality, and, by implication, the want of qualification by those omitted. Then comes an alphabetical list of the names, to which are appended the qualifications, addresses, appointments, and published works, of the provincial physicians, surgeons, and general practitioners. After this we find a supplemental list of those practitioners who have not given any account of their qualifications. The remainder of this portion of the Directory contains a quantity of information useful and interesting to the practitioner; an obituary, a list of colleges and universities in the United Kingdom; the provincial hospitals and dispensaries, poor law unions, &c.; together with an account of the fees claimable by medical witnesses.

We consider a publication of this kind, when well executed, as a boon of the greatest value to every qualified medical man, practising in the country for which it is intended; and we earnestly hope that we shall not be long without an annual and corrected edition of the similar work with which Dr. Croly has favoured the practitioners of Ireland. Dr. Croly's work affords us the only approximation known as to the number of our practitioners.

The Preservation of Infants in Delivery, &c. By Richard King, M. D., M. R. C. S.

This is an ingenious little *brochure*, the object of which is to prove that the common opinion, that in some ordinary cases of

delivery, and in many extraordinary ones, death is caused by pressure on the cord, is not true; that it does not result from cerebral congestion, owing to the arrest of the circulation, but rather from a contrary condition,—not from asphyxia, but from syncope:

"In fact, from the want of compression on the umbilical cord, and not from the dreaded compression of it. The premises are these. Just before the after-birth is thrown off, it is at its maximum of contraction, and therefore preventing the escape of blood from the infant, and immediately afterwards at its maximum of expansion as favouring the escape of blood from the infant. This is a matter of little moment in the natural delivery, because the new life that is set up the moment the head is born encourages the new and discourages the old circulation; but it is all-important in the preternatural delivery, for then it acts as a moist sponge would act when released from the hand, and placed in contact with water. It is from this congestion in the after-birth that I believe the death of the infant occurs within the space of time at which the practice of our best accoucheurs has fixed it."

"The death blow is, therefore, given before the umbilical cord is even threatened with compression."—p. 39.

Account of a new Anæsthetic Agent as a Substitute for Sulphuric Ether in Surgery and Midwifery. By J. Y. Simpson, M. D., Professor of Midwifery in the University of Edinburgh. Edinburgh. 1847. Pamphlet.

Anæsthetic and other therapeutic Properties of Chloride of Formyle. By J. Y. Simpson, M. D., &c. From the Monthly Journal of Medical Science, December, 1847.

Answer to the religious Objections advanced against the Employment of anæsthetic Agents in Midwifery and Surgery. By J. Y. Simpson, M. D., &c. Edinburgh. 1847. Pamphlet.

Remarks on the Superinduction of Anæsthesia in natural and morbid Parturition: with Cases illustrative of the Use and Effects of Chloroform in obstetric Practice. By J. Y. Simpson, M. D., &c. Edinburgh. 1848. Pamphlet.

Our Journal was among the first to check the ardour with which the discovery of the application of ether to prevent pain during surgical operations, was received by the medical profession throughout the world. We pointed out the necessity of receiving with caution statements made as to the action of an agent, the use of which was likely to cause an era in the history of medicine, and the ultimate effects of which there had

not been time for testing. We even went so far as to say that accidents were liable to occur from the inhalation of ether, and to prophesy that, when they did, the rage for its employment would be checked.

Our statement, and the consequent prophecy, were soon proved to be so correct, that attention was rapidly directed in many quarters to the discovery of a substitute free from the deleterious influence which ether was generally admitted to produce in some cases. Of various substitutes which have been proposed, one,—chloroform,—has been found to fulfil completely the necessary requisites. This fluid was tried by Professor Simpson, at the chance suggestion, as he himself states, of Mr. Waldie; but it is to the former, who was the first to test it practically, to discover its advantages, and to bring it before the profession, that the whole credit is due for a discovery little, if at all, inferior to that of the original application of ether.

In this matter we know not whether to admire more the originality which first led Dr. Simpson to the practical investigation of the effects of this new agent, or the energy and perseverance with which he has followed up his discovery, and thereby caused it, within a few weeks, to supersede ether altogether. His talent and energy were familiar to us, who had the advantage of attending the valuable lectures on general pathology, which he so frequently delivered to the class of the late Professor John Thomson, in the University of Edinburgh; but we confess that we did not expect such a display of industry, such a devotion of time, as he has bestowed on this subject, now that he has attained the position and extensive practice in that branch of the profession to which he has devoted himself.

We do not mean in this short notice to enter into any history of the chemical properties or inhalation of chloroform, as at some future time we purpose to recur to the subject, when longer experience shall enable us to enter into some statistical details. For the present we merely wish to call the attention of our readers to the discovery, and to the conditions necessary to produce the complete anæsthetic and soporific effects of chloroform, as stated by Dr. Simpson at the meeting of the Medico-Chirurgical Society of Edinburgh for December 15, 1847, and which we condense from the report in the January Number of the Edinburgh Monthly Journal:

1. The chloroform vapour must always be exhibited as rapidly and in as full strength as possible, if you desire to have its first or exhilirating stage practically done away

with and excluded ; and you effect this by giving the vapour so powerfully and speedily as to apathize the patient at once. 2. In order that the patient be thus brought as speedily as possible under its full influence, the vapour should be allowed to pass into the air tubes by both the mouth and nostrils ; and hence all compression of the nostrils, &c., is to be avoided. 3. The vapour of chloroform is about four times heavier than atmospheric air, and hence, if the patient is placed on his back during its exhibition, it will, by its mere gravitation, force itself in larger quantities into the air passages than if he were erect or seated. 4. The best means of exhibiting chloroform with these indications is the simple handkerchief gathered into a cup-like shape in the hand. 5. Mental excitement of all kinds, from whispering and talking around the patient, is to be strictly avoided, if possible. 6. The quantity required is generally about a drachm ; but the better way is to wet freely the bottom of the cup formed by the handkerchief, and if the patient be not affected in a minute or so, a little more may be added. 7. It evaporates rapidly ; and you must not, therefore, delay for a minute or more after wetting the handkerchief before applying it, as is sometimes done, but apply it immediately. In conclusion,—when the patient is just becoming insensible, he will not unfrequently withdraw his face, or forcibly push aside the handkerchief. If you then fail to reapply it to his face and keep it there, you will be liable to leave him merely excited. The simplest test of its full and perfect effect is some noise or stertor in the respiration.

It does not appear that ether was employed in midwifery practice in Dublin, at least in more than one or two cases, but the use of chloroform has been already introduced here in the treatment of labour, still, however, in very few instances. It is constantly employed, and with the most happy results, in our general hospitals. Mr. Wilde informs us that he has used it in several cases of painful plastic and other operations upon the face and lachrymal appendages ; and that in two instances he witnessed the peculiar phenomena of the patient being rendered insensible to pain, although apparently not unconscious of what was going on around, the patients having been engaged in incoherent conversations with some of the students ; and that in both of these cases the sense of hearing was greatly exalted. He is of opinion that it will not, any more than ether, be generally applicable to operations upon the globe, or the interior of the eye, inasmuch as, during the performance of these latter, a certain amount of volition is necessary on the part of the patient, as in the operation for strabismus, extraction of cataract, &c.

On Poisons in Relation to Medical Jurisprudence and Medicine. By ALFRED TAYLOR, F. R. S., Lecturer on Medical Jurisprudence and Chemistry in Guy's Hospital. London, John Churchill. 1848. 12mo. pp. 855.

IN no branch of medical science is the modern advance of knowledge more characteristically displayed than in forensic medicine; and by none has greater security been thereby given to human life. The chance of impunity is the greatest stimulus to crime; and the discovery of means by which its detection is rendered more facile, must be, therefore, looked upon as the most important prevention to its commission.

In the middle ages the science, for so we must term it, of *secret poisoning*, attained an extraordinary degree of perfection in France and Italy, so much so that many believe it was not discovered until the seventeenth century; but there is unquestionable evidence of its having been known to the ancient Greeks and Romans. At this period no life was safe; and in every large town we read that a profitable trade was carried on by certain individuals, usually females, who possessed the knowledge, as Beckmann quaintly writes, "of freeing wives from disagreeable husbands within stated weeks and days." This latter observation has induced some of the most learned physicians to disbelieve altogether in the art of secret poisoning; but although we would be slow to credit many of the statements of the writers of the sixteenth and seventeenth centuries as to the extraordinary powers of those *poisoners*, we cannot avoid believing that they possessed knowledge as to the mode of preparation, and the effects of poisons, especially in certain combinations, which is completely unknown to the moderns.

Of all the adepts in the art of poisoning, from the days of Locusta who supplied Agrippina with the means of getting rid of the Emperor Claudius, as described by Tacitus, down to those of the Marchioness de Brinvilliers, who was executed at Paris on the 16th of July, 1676, none acquired more fame, or has handed an infamous reputation with more certainty down to posterity than the woman Tophania, a native of Palermo, but who afterwards resided at Naples. "She sold those drops," writes Beckmann, "which from her acquired the name of *aqua Tophania; aqua della Toffana;* and which were called also *acquetta di Napoli*, or only *acquetta;* but she distributed her preparation by way of charity to such wives as wished to have other husbands. From four to six drops were sufficient to destroy a man; and it was asserted that the dose could be so propor-

tioned as to operate in a certain time."(*a*) Before her execution this woman confessed to have caused the death of not less than 600 persons.

The composition of this preparation which possessed such wonderful powers, of course, attracted much attention. All accounts of it agree in stating, that it was a clear, insipid water, which never betrayed itself by any extraordinary or immediate effects, and the most generally received opinion as to its composition (with which our author, Mr. Taylor, agrees), is that it was simply a solution of pure arsenic in distilled water. This view of its composition cannot, however, be correct, for arsenic is so very insoluble in distilled water,—water at ordinary temperature dissolving only from an 800th to a 400th of its weight,—that it would require 1600 instead of six drops to cause death, admitting the validity of Mr. Taylor's assertion, that four grains have, in some cases, destroyed life; according to Dr. Christison, however, the smallest fatal dose on record is thirty grains: besides, a solution of arsenic would soon become decomposed; and Tophania was in the habit of distributing her poison in small glass phials, terming it *manna of St. Nicholas of Bari*, so that the purchasers might keep it by them until a favourable opportunity offered for its use. The same argument applies to the statement of the Abbé Gagliani, who affirmed that it was a liquor obtained from a mixture of opium and cantharides. We are thus forced to believe that the exact composition of this extraordinary poison is unknown, and that the knowledge of its mode of preparation has been lost. Fortunately for mankind, chemical science in the present day is directed to the discovery of means for detecting poisons already in use, and not to the invention of new or more powerful ones. "It is not because we know less," says Dr. Duncan, in the Supplement to the Encyclopædia Britannica, "but because we know a great deal more than our forefathers, that the art of secret poisoning seems to be lost."

There were, we believe, few countries of the ancient world, at least those in which civilization had made any progress, in which the effects of poisons were unknown or untried. We have already said that the ancient Greeks and Romans were well acquainted with them; and the Saracens, who at one period possessed a much more extended kingdom than either, were in the habit of using them, and, it would appear, with a scientific skill, which even the school of René,—chemist, and consequently poisoner to Catherine de Medicis,—could not ex-

(*a*) Beckmann's History of Inventions, Bohn's edition, vol. i. p. 52.

ceed. Thus Ockley, in his admirable History of the Saracens, informs us that Hassan, fifth caliph after Mohammed and his grandson, died of poison administered to him by one of his wives, in the year of the Christian era 669; and Major Price, who closely followed the Arabian manuscripts, in his elaborate "Mohammedan History," adds that the method which she adopted in the accomplishment of her design was not less remarkable than its consummate perfidy; for upon an occasion of anointing her husband's person after the bath, she used a napkin which she had previously impregnated with poison, which soon pervaded the frame of Hassan, and speedy and inevitable death was the consequence(*a*).

It will not surprise our readers to learn that the ancient Irish, with their advancement in learning, were also skilled in this secret art. In the Leabher Breac, a manuscript of the fourteenth century, it is related, at fol. 15, that "St. Patrick, being at Temar, the Druid Lucat Mael put *a drop* of poison into Patrick's drink, and put it into Patrick's hand: Patrick blessed the drink and turned the vessel upside down, and the poison dropped out of it, but no part of the ale did. Patrick then drank the ale." This occurred A. D. 432 or 433, and the book in which it is related is a copy of a very much older MS. No matter how apocryphal this statement may be, it is sufficient proof that in the fourteenth century it was known in Ireland how poison could be prepared of so powerful a nature that a single drop of it would be a fatal dose, or the writer of the manuscript would not have dared to narrate this amongst other miracles performed by the Saint.

The following extract, translated also from a manuscript of the fourteenth century, proves that the effects of *slow* or secret poisons were likewise known at a very early period in Ireland:

"Anno Domini 366. Eoghy Moymedhon, monarch of Erinn, died. He left four sons by his wife, Mongfinne (the fair-haired), the sister of Crimthann More, King of Munster. This Crimthann, on the death of Eoghy, assumed the monarchy of Erinn, to the prejudice of the young princes, his nephews, and having made an expedition into Scotland, his sister availed herself of his absence, raised a revolution at home, and enabled her sons to seize upon the country, giving the supreme rule to Brian, her eldest son. Crimthann, hearing of this in Scotland, hastened home, and, marching into Connaught, encamped on the bank of the River Moy. Mongfinne took counsel now, and the counsel was, to invite her brother to a

(*a*) Ockley's History of the Saracens, Bohn's edition, p. 350.

feast on Dornglas Island, in the River Moy, for the purpose of procuring his death by treachery. She then repaired to her brother's tent, and made a pretended peace with him on the part of her sons. She then invited him to go and see the feast she was preparing for him, to which he consented. When they had inspected the feast she put a poisoned cup into her brother's hand, requesting him to drink it. 'I shall not,' said Crimthann, 'till you have drank first.' She drank a drink, and Crimthann drank after her. Mongfinne died upon Samhain's night (Allhallow-Eve). Crimthann went southward then to his own country until he reached Sliabh-oighidh-an-Righ (the Mountain of the King's Death) in Clare, where he died and lies buried."(*a*)

The French chemists were undoubtedly the first to direct their special attention to the investigation of the action of poisons, their antidotes, and the means of detecting them. Nor is this to be wondered at, for in no part of the world did the administration of poisons with felonious intent become so common as in France, from the middle ages downwards. It was not, however, until the appearance of Orfila's treatise early in the present century, that this department of forensic medicine could be said to rest on any certain basis. Previous writers had adopted loose statements as to the effects of reagents on various poisons, without testing their accuracy by direct experiment; but here were to be found original chemical investigations, not on one or two poisons, but with reference to all, and in no instance was a statement made, no matter how great the authority, that was not rigorously tested.

This method of treating the subject has influenced all who have since published general or special works on medical jurisprudence. Christison, whose great work on poisons has justly earned for him a never-dying fame, closely followed Orfila's footsteps, so far as related to original experiment and investigation; and Mr. Taylor, whose work is now before us, is no unworthy disciple of the same school.

In our review of Mr. Taylor's Manual of Medical Jurisprudence in the second volume of our New Series, we have already passed a high panegyric on the manner in which the subject of poisoning was treated, and the extended space which a special treatise on this department affords, has enabled him to supply any deficiencies which the limits of his book then rendered necessary. We thus find that the treatment of poison-

(*a*) Book of Ballymote, fol. 145. For the above references and translations we are indebted to our friend Mr. Eugene Curry, the distinguished Irish scholar and transcriber.

ing now receives a due share of attention; the various chapters are much extended, many new ones added, and the entire subject brought carefully down to the very day of publication.

The first fourteen chapters are devoted to the consideration of a question, in general too superficially studied by the medical profession, and concerning which some most extraordinary and vague notions exist, namely, *medical evidence in cases of poisoning*. They are written in clear, simple, but forcible language, not to be misunderstood by the meanest capacity, and written too as the result of an extended experience, which has rarely fallen to the lot of any one man, for Taylor is now the Orfila of England. They deserve to be studied, and must be studied by all who have the least ambition to acquit themselves with credit, if required to give evidence in a case of poisoning. It is to our brethren practising in the country, remote from large libraries, and often, too, from the advice or assistance of other medical men, that a knowledge of the rules here laid down will prove an invaluable acquisition, comprising as they do, not alone the chemical but the legal information which they so often stand in need of. As an example of the latter, we make the following extract:

"ON THE USE OF NOTES.—It has been already recommended as a rule in these criminal investigations, that a practitioner should make notes of what he observes in regard to symptoms, *post mortem* appearances, and the results of a chemical analysis. From the common forms of law in this country an individual charged with the crime of poisoning may remain in prison, if at a distance from the metropolis, for some months before he is brought to trial. It is obvious, however clear the circumstances may at the time appear to the practitioner, that it will require more than ordinary powers of memory to retain for so long a period a distinct recollection of all the facts of the case. If he be unprovided with notes, and his memory be defective, then the case will turn in favour of the prisoner, for he will be the party to benefit by the neglect of the witness. In adopting the plan here recommended, such a result may be easily prevented. It may be remarked that the law relative to the admissibility of notes or memoranda in evidence, is very strict, and is rigorously insisted on by the Judges. In order to render such notes or memoranda admissible, it is indispensably necessary that they should be taken on the spot at the time the observations are made, or as soon afterwards as practicable. It is not necessary to their admissibility as evidence that the observations should be written down by the practitioner himself, provided they are made under his immediate inspection at the time, or at his suggestion, and are soon afterwards looked over and corrected by him. Thus, whenever at a trial a medical witness produces notes for reference during his examination, the question is invariably put to him as to when the

notes were made; their admissibility depends upon his answer. Many examples might here be cited of the rejection of notes made by medical witnesses, owing to a non-observance of these points. On the trial of *Sir A. Gordon Kinloch*, at Edinburgh, for the murder of his brother, the surgeon was about to give his evidence respecting the wound of which the deceased had died, from notes made some time after the event, when he was stopped by the Judge, who explained to him the law on the subject. The reason why the law so rigorously excludes the admission of memoranda in evidence, made at a distance of time, appears to be this: it prevents the possibility of all fraud or collusion on the part of the witnesses, either to favour or injure the prisoner; for a connected story might, it is presumed, by such means, be so made up, at a distance of time, as to defy the ingenuity of counsel at either side to make out the deceit. The notes used by a witness should be original, and not *a copy*, of notes made by another. A copy of notes, except under very peculiar circumstances, is not admissible as evidence.

"There is another rule of law with respect to the use of notes or memoranda in evidence, which is not, perhaps, so generally known to medical practitioners, but it is essential that it should be observed. The notes may have been fairly made on the spot in the manner required by law, but when a witness is about to refer to them, he will probably be asked whether he is using them for the purpose of refreshing his memory, or whether he is about to speak only from what is written on the paper, without having any precise recollection on the subject. If he is referring to them for some fact which he has altogether forgotten, then the notes are pro tanto inadmissible as evidence, for it has been held by our Judges that notes can only be used in evidence for the purpose of refreshing the memory on a fact *indistinctly remembered:* they are not to be permitted for the purpose of reviving impressions entirely forgotten. The most eminent legal writers lay it down, that if there be any single point in the notes which the witness does not recollect, except that he finds it there written, such point is not evidence. Notes are only allowed to assist recollection, not to convey information."—p. 105.

This extract is, we think, sufficient to enable our readers to judge of the character and value of the information contained in Mr. Taylor's volume. It, indeed, needs no praise of our's; its extraordinary cheapness, its beautiful typography, its portability, all speak for themselves; and Mr. Taylor's previous work, with the vast experience he has since acquired, is a sufficient guarantee for its contents. For ourselves, we feel confident that it will ere long be the table-book of every medical practitioner who has the least regard for his own reputation, and be found in the circuit-bag of the barrister in company with Archbold's Criminal Pleadings and Roscoe's Criminal Evidence.

A *Hand-Book of Field Botany, comprising the Flowering Plants and Ferns indigenous to the British Isles, arranged according to the Natural System; the Orders, Genera, and Species carefully analysed, so as to facilitate their Discrimination; with a synoptical Table of the Genera, according to the Linnæan Classification, and a Glossary of those Terms most commonly in Use.* By WILLIAM E. STEELE, A. B., M. B., &c. &c. Dublin, M^cGlashan. 8vo., pp. 249.

THIS little work, the objects of which are fully described in the title-page, does Dr. Steele much credit. It is obviously the result of patient industry and considerable discretion. In the descriptions of the several species, the British Flora of Sir W. J. Hooker has been taken as the text, and the writer has manifestly noted with much care the botanical criticisms of Mr. Babington and others, which lie scattered through the pages of British periodicals. A nice pocket Flora, we may also say, was a book that was wanted. That noble work, the Flora Hibernica, is somewhat too large to bring out into the fields; and although it may be questioned whether a botanist does actually ever examine a plant critically during an excursion, but is not rather in the habit of bringing the plants home with him and studying them at his leisure, still, to the beginner, the practice of open air investigation is, no doubt, of great importance. It may be objected to this Hand-book that the great number of contractions and signs of various kinds employed in it render it rather puzzling to beginners, but we confess we do not see how such a quantity of matter could be compressed into so small a space without their employment. On the whole, we are very much pleased with this compilation; it is very neatly printed, on good paper, and the lithograph, illustrative of the various organs of plants, is well executed.

In the introduction Dr. Steele affords us his opinion as to the manner in which a practical Flora ought to be constructed. In point of classification, he prefers the natural system to the method of Linnæus. He says:

"The present advanced and advancing state of botanical science in these countries renders it unnecessary for me to defend the adoption of the system of natural orders, as the basis of a work like the present, in preference to that of Linnæus. The public voice has now decided this question; so that the advocate for the Linnæan system, in place of being an effective assailant, is now compelled to act on the defensive."

Before we proceed any further with the quotation, we must express our dissent from the statement that botanical science in these countries is "advanced and advancing." We do not deny that there are some Englishmen, and Irishmen also, who deserve the title of great botanists; and we should, indeed, be wanting in gratitude if we overlooked the name of our own Harvey, who is even now shedding honour on our University by his beautiful illustrations of the British algæ. But there being a few great botanists in these countries does not warrant us to boast of the "present advanced and advancing state of botanical science." In fact, there are a great many studiers of plants, but very few students of botanical science. We doubt is there an English, Irish, or Scotchman, who deserves the title, and whose name is known out of his own coterie, with the honourable exception of Robert Browne. We have in this Number of our periodical a brief Report on the progress of botanical physiology, and we regret to say that we have been forced to confine it, almost exclusively, to the labours of foreigners, because our countrymen have done so little that is worth recording. Now, it is on vegetable anatomy and physiology that true botanical science is principally based; but Dr. Steele may mean, when speaking of the "advanced and advancing state of botanical science," that botany is becoming popular amongst the masses,—that it is a favourite study of the million. We regret that we must also dissent from this opinion. We venture to assert that botany was much more popular in Dublin forty, or even eighty years ago, than it is now. The members of the Medico-Physical and other Societies of the former period had an herb-collector (see the Preface to the present Series of this Journal), and frequent mention is made in their Transactions of rare plants brought to them for inspection. They were in the habit of going out on herbarizing excursions; and Dr. Rutty thought it, in one instance, a great grievance that a sufficient number did not attend on one of these occasions. What chance would we have, at the present day, of getting half-a-dozen members of the Royal Irish Academy to attend an herbarizing excursion? And be it remembered, this Medico-Physical Society numbered in its ranks the first physicians and surgeons of the day. We are informed by our respected friend, Mr. Mackay, of the many pleasant tours, having a botanical object, in which, some forty years ago, he accompanied Dr. Whitley Stokes, Dr. Percival, and other eminent men of that period. Ah! we beg to assure Dr. Steele that botany is not advanced or advancing in popularity. But to return to Dr. Steele's argument:

"The very simple and superficial nature of the inquiries necessary to be instituted in assigning to any plant its class and order in the system of the great Swede, is the chief, if not the only reason that can be urged to justify the continued use of that arrangement. It must be borne in mind, however, that the investigation does not end with this; for, in order to determine the genus of which the plant is a species, in the heterogeneous assemblage thus brought together, other, and frequently most minute points of structure, must be inquired into, surrounding this phase of the investigation with considerable difficulties. In the natural system these difficulties are merely transferred to the determination of the natural order; but this once accomplished, that of the genus is comparatively simple. So far, then, it is apparent that the difficulties in the application of either system to the determination of genera are nearly balanced. If, however, we can simplify the investigation by which we can assign a plant to its natural order, then the one plea against the condemnation of that of Linnæus is removed, and we are justified in venerating it merely as the beautiful structure of a past age, but which is altogether unsuited to the requirements of a more enlightened generation."

Now the above is precisely identical with the argument used by Dr. Lindley in the Preface to his Synopsis; yet for one student who has made use of the Synopsis, we venture to say that one hundred have employed Hooker's British Flora, or the edition of Withering, by Mac Gilivray. The argument, as we understand it, may be stated thus: that in making out a genus by the Linnæan method the first steps are easy, but the subsequent ones are difficult; whilst by the natural system the first steps are difficult and the subsequent ones easy; and that thus, on the whole, the difficulties being equal, we ought to prefer the mode by which we learn most. It is on all hands agreed, that it is quite out of the question for the student of botany to begin by committing to memory the characters of all the natural families. He must already have examined a great number of plants before he can comprehend the principles upon which they are grouped into what are called natural families. No doubt, when he is so far advanced as to be capable of realizing the essential characters of these associations, he will have acquired instruments of accelerated progress; just as in the higher mathematics facilities are available which the novice cannot use. But, it is said, "we can simplify the investigation by which we can assign a plant to its natural order;" and how is this to be done? By forming an analysis of the vegetable kingdom upon some few differential characters; by requiring the student to interrogate the plant, in what may be called a dichotomous manner, through a

great number of questions. For example: if the learner takes up the common sea catch-fly, and wishes to ascertain what family it belongs to, he has, first, to observe whether it be a flowering plant: secondly, whether it be a tree or shrub, with distinct bark, wood, and pith, or an herb; whether the leaves be branch-ribbed or straight-ribbed; whether the flowers be tertiary or sextenary, or not; whether they are arranged in a spadix or enveloped in a spatha, or not: thirdly, he will have to see whether the flowers have both stamens and pistils: fourthly, whether the ovary be inferior or superior: fifthly, whether the corolla be apopetalous or synpetalous: sixthly, he will have to determine whether the petals are or are not larger than the sepals: seventhly,—but there is no use in fatiguing our readers. It is sufficient to say that the student will require to proceed to *fifteenthly* before he can satisfy himself that the family is that of the caryophilleæ; and he must subsequently determine the genus and the species.

Now Dr. Steele knows as well as we do that natural groups are constituted by their collective, and not by their differential characters; yet in this mode of discovering a natural order, all the stress is laid on differential characters. This is wrong in principle, and is calculated to cause the student, at the very outset, to form erroneous notions of what it is that constitutes a natural group. Lamarck has followed a somewhat similar method of analysis, but he never once suggested that it had any foundation in nature; he merely used it as a help to facilitate the distinction of genera and species. We are sure that Dr. Steele has been led astray by the example of Dr. Lindley, yet we gladly acknowledge that his analysis shews a great deal of ingenuity; but we confess that we would prefer, if difficulties be equal, the employment of a method avowedly artificial, than of one intrinsically just as much so, although presented under the disguise of a natural system. We are the more earnest on this subject, because we fear that the natural system is neither taught nor understood in these countries.

Dr. Steele follows an unusual arrangement of the natural families. In explanation of his reasons for doing so, he says:

"The idea has long occupied my mind, that the principles of vegetable transformation, or morphology, might be made available in the formation of the higher divisions of flowering plants, in the same manner that the morphology of the simple cell may be used in the arrangement of the lower cryptogamiæ. Botanists are now so familiar with the doctrine, hinted at by Linnæus, but more distinctly enunciated by Goethe, of all parts of a flower being, in truth, nothing but modified leaves,—of the bracts, calycine divisions, petals, stamens, and

pistils, being leaves altered in texture and form,—that it is not necessary here to enter more fully into this matter. To effect these metamorphoses, it is apparent that some special vital forces are called into action; and we are justified in the inference that those flowers which exhibit the most extensive departures from the original type, as the result of a more intense action of these forces, ought to be regarded as possessing a higher structural nature than those wherein the primitive model may be more evidently traced. It is manifest, then, that the most simple metamorphosis the leaves undergo is in the production of flowers, all the parts of which most nearly resemble the former in being distinct from one another; and that when these separate parts appear in a new condition, by their cohering more or less intimately with each other, a more complete alteration is effected. Therefore it is, I conceive, that flowers whose parts thus cohere are to be considered as possessing a more exalted structure than those in which the several floral whorls, and the members of each, are distinct. In the construction of a system for the arrangement of flowering plants, according to these views, the following principle may be enunciated:—*That plants whose flowers exhibit their several parts in a state of separation, are to be placed in a lower position than those in which their several parts are in a state of cohesion.*"

We hope Dr. Steele will pardon us when we say that there are several assumptions in the above argument which require proof. It is assumed that flowers are metamorphosed leaves: now would we not have as good a right to say that leaves are metamorphosed flowers? Let Dr. Steele take the petal or stamen of any flower, and demonstrate that it ever was a leaf. He knows that he could not. The fact is, that two buds, originally similar, will, according to circumstances, be differently developed; the one into a branch bearing leaves, the other into a flower. A second assumption is, that this supposed metamorphose is effected by a special vital force; but why imagine this? Why appropriate a special vital force to the development of a branch, and another special vital force to the development of a flower; and, we suppose, little particular forces to each sepal, petal, stamen, and pistil. Are they not the circumstances which determine the development? Dry, sultry weather has continued for some time, and the rose-bush puts out flower-blossoms; the weather changes, heavy and continued rains set in, and the flower-buds become blighted, or, it may be, push out through their centres branches bearing little leaves. Did the rain drive away the special vital force of the flower-bud, and summon into existence the special vital force of the leaf-bud? A third assumption is, that adhesion or cohesion is a manifestation of more exalted vital force. If this be so, the leaves of

the lonicera caprifolium are connate, and those of the periclymenum distinct, because of the superior vital activity of the former. The apple-tree must possess much more life-activity (as the Germans say) than the oak, inasmuch as it is so much more frequently grafted; but we rather think that the reason is, that the gardener brings the graft and stock of the former tree into proper contact, so that the ordinary progress of growth may produce the desired adhesion. The deduction drawn from these assumed premises is certainly a curious one, namely, that the more a flower differs from a leaf (a branch bearing leaves), the higher is its structural nature, and that, therefore, as a corollary, the compositæ are the first among plants.

Our readers will perceive, by the space which we have devoted to this Hand-book, that we think highly of it. We, therefore, recommend Dr. Steele's manual to all those who are desirous of studying field botany. And, in the mean time, we have no doubt that we shall see the industrious author at a future day distinguishing himself by his original researches in this open field for investigation.

Practical Observations on certain Diseases of the Chest, and on the Principles of Auscultation. By Peyton Blakiston, M. D., F. R. S., Physician to the Birmingham General Hospital. London, 1847. 8vo. pp. 668.

The medical practitioners of Birmingham are well known to be a body of zealous and enlightened men, and the practical value of the works which have been from time to time produced by Hodgson, Langston Parker, Middlemore, Ryland, Ingleby, &c., will prepare the reader to expect a useful contribution to the knowledge of diseases of the chest, from one who has for many years filled the appointments of physician to the dispensary and the large hospital of that town. Nor will the work disappoint these expectations, for while we cannot recommend it to the student as an introduction to the study of auscultation, for which we do not consider it at all fitted, we think there are few practitioners who may not peruse with advantage the memoirs which it contains on thoracic aneurism, on chronic diseases of the heart, on plastic pneumonia, and on phthisis, from each of which we shall, without further preface, proceed to select an example of our author's method of treating these subjects, and of the statistical results of his extensive observation.

Passing by the fifty pages devoted to an exposition of the principles of auscultation (by far the least valuable part of the book, and one which might have well been omitted), we have a chapter on thoracic aneurism, its formation, termination, and causes. Among the last, *atheroma*, of course, is dwelt upon.

"This substance," says the author, "is constantly found in aneurisms; and as its tendency is to destroy the elasticity of the artery it invades, and to favour its rupture, it is universally allowed to be the most constant proximate cause of aneurism."

Gluge found atheroma to be chiefly composed of fat, and Cruveilhier discovered cholesterine crystals in it. This was confirmed by Hasse, and also by Mr. Gulliver, who was not aware, however, of the researches of his predecessors. Vogel has described a mass of atheroma as consisting of many tubular, colourless crystals of cholesterine, of the ordinary characteristic forms; rhomboidal tablets of many irregular, amorphogranular masses, which did not dissolve in water, but were soluble in alcohol, after the evaporation of which they again thickened into amorphous, brownish clots, probably fat. Besides these elements, and some few fat globules, nothing was present.

"*Calcareous Concretions.*—Instead of softening, calcareous grains are sometimes deposited on the patches of atheroma, which, coalescing, form crusts and bony-looking scales. They are described by Valentin as organized calcareous deposits; the earthy bodies being deposited as round, granular, or irregular compact bodies, with prolongations radiating in all directions within a pellucid, more or less lamellated, and finely granular organic texture. It is hardly necessary to insist on the difference between these concretions and natural bone. They are principally composed of phosphate, with some carbonate of lime.

"Now atheromatous deposit cannot be a local affection, for it is not only found throughout the whole of the arterial system, but occasionally in the lungs, where it would seem to have replaced tubercular matter; and I have also found it on the glands of the gastro-hepatic omentum, associated with calcareous concretions. Dr. George Johnson has shewn that the arterial tunics, in a healthy state, contain some minute quantities of fat, so that the affection under consideration consists in an excessive deposit of fat in tissues which, in a state of health, are sparingly supplied with it, a process closely resembling that which has been demonstrated by Mr. Bowman in fatty liver, and by Dr. George Johnson in the uriniferous tubes of the kidney in Bright's disease, and with both which diseases Dr. Johnson has found atheroma very frequently associated. He, there-

fore, concludes that these diseases are related to each other as joint effects of one common constitutional cause.

"It has been shewn by Becquerel and Rodier that the amount of free cholesterine in the blood varies very much, and that it is greatly increased at that period of life at which we shall presently see there is also an increase of atheromatous deposit. Upon this Vogel remarks that the augmentation of this substance in the blood is probably connected with an increased separation of it in the various parts of the body, and that a similar increase may take place in young persons in consequence of a morbid process."

Both Andral and Lobstein think this state of the constitution is closely allied to that which exists in arthritis; there is, however, a great difference between the chemical composition of urate of soda and atheroma, and so also is there between the latter substance and tubercle; and yet there are some striking points of resemblance between the modes in which each of these substances is deposited in the tissues.

"In the present state of our knowledge, we can, I think, go no further than to infer that the deposition of atheroma is a process of abnormal nutrition, depending upon a peculiar state of the constitution, which may be denominated the atheromatous diathesis. It is very probable, however, that future investigators will discover that the same state of the constitution gives rise to other forms of disease."

No mention is made of syphilis, which, according to Mr. Porter and others, is so peculiarly a predisposing cause of atheromatous disease. We observe that in Dr. Greene's posthumous paper on aneurism of the aorta the previous existence of syphilis was noted in *half the cases.*

Atheroma having been deposited in the coats of an artery, the formation of aneurism is specially favoured by two causes, *age* and *sex.* The author thus accounts for its frequent occurrence at a comparatively early age:

"An examination of cases recorded by different writers proves that aneurism prevails especially between the ages of 40 and 50, but it will presently be seen that the atheromatous diathesis increases with age, seldom being marked under 40. It would appear, therefore, that above 50 aneurism decreases, whilst atheroma increases. The following observations may, perhaps, help to explain how this occurs. Assuming atheroma to be the constant proximate cause of aneurism, its rarity under 40 accounts for the rarity of aneurism under that age. When, however, it is once deposited, the younger the subject the greater will be the tendency to the formation of aneurism, for this depends not so much on the amount of

atheroma, as on its tendency to soften : now the younger the subject the more active would be the circulation, the moister the exudation, and the greater the tendency to ulceration. In old age the reverse of this takes place, the circulation is retarded, the quantity of the general nutrient fluid is probably diminished, and the atheromatous patches are dry, or are soon converted into calcareous concretions. By the same law the softening of tubercular matter takes place with less and less rapidity as age advances, so that the older the patient the more chronic is the march of the disease. Again, the nerves are more excitable, and the muscular power is greater, in middle than in old age ; hence nervous palpitations are more easily excited, and the action of the heart is more energetic. At this period of life more violent exertions are usually engaged in, and falls and shocks of different kinds are of more common occurrence, than in later life."

Numerous cases of aneurism are detailed, which, however, do not present any remarkable features. The following are the somewhat meagre results of the author's observation of the diagnostic signs:

"A careful analysis of the signs observed in thirty-seven cases of thoracic aneurism leads to the following results :

"No diagnostic sign was furnished by the character of the pulse, or by the presence of pulsation above or below the clavicles.

"When a pulsation was seen and felt over a prominent spot in the chest, it indicated the presence of a sacculated or mixed aneurism.

"Purring thrill was only valuable as a sign of aneurism in conjunction with other signs.

"Systolic murmur, heard at a distance from the heart, even though it were not heard at the præcordial region, only afforded evidence of the existence of aneurism when it was combined with other signs denoting the existence of a circumscribed tumour.

"A double or diastolic murmur, confined to one spot at a distance from the præcordial region, denoted the existence of a sacculated aneurism.

"When a hollow murmur was heard, a dilated aneurism was present.

"The intensity of aneurismal murmur was in a great measure proportioned to the force of the heart's action.

"Aneurism of both kinds existed without the slightest trace of pulsation.

"Aneurisms arising within the sac of the pericardium were not indicated during lifetime by any characteristic signs."

We have only space for a short extract from his chapter on the diagnosis of chronic heart diseases:

"When we meet with persons labouring under palpitation,

dyspnœa, irregular pulse, fluttering or constriction at the præcordial region, and other symptoms indicative of derangement of the action of the heart, the first point to be determined is, whether this derangement depends on *organic* or *inorganic* causes.

"If, however, it be decided that some organic changes have taken place in the heart itself, the next point to be determined relates to the nature of such changes,—whether the contractile power of the heart, or its valvular apparatus, or both, are affected, and if the contractile power be affected, whether it is increased or diminished."

After some remarks on the increase and decrease of the contractile power, the author examines the signs of *adhesion of the pericardium*, pointed out by Dr. Saunders, Dr. Hope, &c., and concludes that there is no sign by which it can be recognised; but no allusion is made to the valuable sign of *immobility* of the heart's impulse, thus announced by Dr. Cowan: "In a healthy person sitting erect, the apex strikes two inches below the nipple, and about one inch from the sternum. If lying on the left side, the apex is vertical with the nipple. If on the right side, it strikes in a line with the edge of the sternum. In adherent pericardium, *this mobility is lost.*"

Our author thus sums up the signs of valvular derangements:

"Aortic Orifice.—*Obstruction;* systolic murmur traced up the course of the aorta; sometimes very prolonged.

"*Regurgitation;* diastolic murmur running up the aorta; visible arterial pulsations.

"Mitral Orifice.—*Obstruction;* sometimes diastolic murmur at the apex of the heart, and at the lower angle of the left scapula; not up the aorta without visible arterial pulsations; pulmonary obstruction.

"*Regurgitation;* sometimes, but not often; systolic murmur heard at the apex of the heart, and at the lower angle of the left scapula; occasionally undulations between the second and third left ribs; pulmonary obstruction.

"Tricuspid Orifice.—*Regurgitation;* seldom any murmur; venous pulsation of the neck; obstruction of the general circulation."

Nothing whatever novel is offered on the treatment of aneurism or heart disease. We were struck with the author's ideas on the use of mercury in the latter affections. He barely alludes to it; recommending precautionary frictions of mercurial ointment over the præcordia in acute rheumatism! And again, in the following passage, which we confess we do not clearly understand:

"The same inflammatory action which in so many cases pre-

cedes hypertrophy, in many also induces valvular disease. As a prophylactory measure, therefore, *mild mercurial frictions may be occasionally used over the præcordial region*," &c.

We certainly were aware that endocarditis induced valvular disease, but we did not imagine it could be safely met by such inefficacious practice as occasional *mild* mercurial frictions over the præcordia.

We would refer the author to Dr. Latham's work on Diseases of the Heart, vol. i. In the eighth lecture it is stated, that of 136 cases of acute rheumatism, endocarditis was present in sixty-three, and that valvular disease followed in no less than thirty-six of these. Such serious complications demand nothing less than the prompt, steady, and persevering use of mercury; and it is satisfactory to know that there is much reason to believe that even the structural changes caused by endocarditis are not wholly out of the reach of the medicine so employed. Of its valuable effects in other cases of heart disease, attended with pulmonary congestion, dropsy, &c. &c., the author makes no mention whatever.

Passing by the chapter on circumscribed pleurisy, which does not contain anything worthy of remark, we have next an abstract of the results of seventy-eight cases of chronic pleurisy occurring under the author's observation. The following are some of these:

"*Seat.*—The right side was the seat of disease in twenty cases; the left in fifty-eight.

"*Extent.*—In fifty cases one side was completely filled with fluid; and in twenty-eight, from one to two-thirds of the side.

"*Figure.*—In forty-five cases the affected side exceeded the opposite on measurement by three-quarters of an inch, and in some instances by an inch and a half on a level with the nipple, and half an inch under the arm-pit. In twenty-eight cases there was little or no difference in the two sides, and in five the affected side measured less than the other, in all of which the fluid reached up one-third of the chest, and the attack was on the decline at the time of examination.

"There was *œdema* of the side affected in twenty cases.

"The *intercostal depressions* were more or less obliterated in twenty-eight cases, in all of which the fluid extended up to the clavicle.

"*Position of the Heart.*—In all the thirty-nine cases in which the left side was full of fluid, the heart was pushed to the right of the sternum. Unless, however, the side was nearly full, the position of the heart was not affected. In only two of the cases in which the right side contained fluid, was it clearly perceived that the heart was tilted up towards the left axilla."

We cannot admit the accuracy of this observation. Our experience rather coincides with that of Dr. Stokes, who says: "This important sign occurs from the earlier periods, and exists long before any protrusion of the intercostals or diaphragm;" and, "Displacement of the heart to the right side by no means implies obliteration of the left lung; on the contrary, the upper lobe may present distinct vesicular murmur, while the heart pulsates to the right of the sternum."

"The permanent displacement," says our author, "of the heart to the right side of the chest, has been noticed by Dr. Stokes as one of the results of pleurisy, and attributed by him to the absorption of fluid effused into the right side of the thorax,—an opinion, the accuracy of which he was enabled to verify in one instance after death. As so few cases of this kind are on record, the three which follow may prove interesting, more especially as they in some degree confirm Dr. Stokes's opinion."

As we do not agree in the author's diagnosis, we shall submit two of these cases of presumed empyema for our readers' judgment. Passing by Case 86, in which the evidence of pleuritis is satisfactory, we transcribe Cases 87 and 88. A miner, aged 53, had been troubled with a dry cough for five years, and dyspnœa on exertion. Twelve months since he took cold, when his breathing became more laborious, and his cough more troublesome, and was accompanied by expectoration of froth, and by a dull aching pain under the left nipple. For the last two months he has had spasmodic cough, with scanty expectoration, and great dyspnœa. On his admission into the Birmingham General Hospital, there was a slight lateral curvature of the spine towards the left. Below the nipple the right side measured three-quarters of an inch less than the left side. The heart was seen and felt to beat to the right of the sternum, in a line with the nipple. The left side of the chest sounded clear on percussion, and the lower part particularly so. *Over the right clavicle*, and three inches below its sternal end, the sound was very dull, and a slight dulness was observed at the spot where the heart was seen to beat. *The upper third* of the right side behind sounded also dull; whistling respiration was heard at a distance; very little respiratory sound was perceived on the right side, but under the right clavicle it was tracheal, and in other parts was marked by dry rattles. Behind the left side there was a large, uneven, mucous crackling. He left the hospital in a few weeks, relieved; his heart continued to beat to the right of the sternum.

A collier, aged 39, had been subject to dyspnœa and cough, with muco-purulent expectoration, for ten years. It was at-

tended with increased dyspnœa and constriction of the chest, followed by the expectoration of dark liquid blood on taking fresh cold. He had on these occasions night sweats, and had gradually, year by year, been losing flesh. Four years ago he caught cold, and suffered much from a severe cutting pain under his right nipple, increased by deep inspiration; and shortly afterwards he noticed his heart beating on the right side of the sternum, where it has remained ever since. On his admission into the Birmingham General Hospital, the left side measured half an inch more than the right side, on a level with the nipple. His breathing was rather stridulous. The heart was both seen and felt to beat on the right of the sternum, a little below the nipple. The left side of the thorax seemed bulged out, and the right side flattened; there was a slight spinal curvature to the left; the breathing was chiefly abdominal; the whole of the right side sounded duller than the left on percussion, *more especially behind and under the clavicle.* The pulmonary sound was coarse, and was prolonged during expiration under both clavicles. It was accompanied by some crackling over the left side, and was quite masked by mucous rattles on the right side. *Incomplete pectoriloquy was heard under the right clavicle,* and strong buzzing bronchophony below the angle of the right scapula. The sounds of the heart were heard clear and distinct on the right side, but very remotely on the left side. He left the hospital relieved.

"The evidences of pleurisy on the right side in Cases 86 and 88 are strong and conclusive, and the time when the heart passed over to the right side is accurately marked. The general signs in Case 87 are more obscure, but there can be little doubt that effusion had once existed in the right pleural cavity. Indeed, the result of such effusion was seen in this, as in other cases, in a diminution of the size of the right side of the thorax."

We should admit the existence of such an absorbed effusion, if contraction of the side and displacement of the heart could not be otherwise caused; but, believing it to be otherwise, we cannot see any evidence of such effusion, and we consider these cases to have been examples of that peculiar contraction of the pulmonary parenchyma described by Dr. Corrigan under the name of "cirrhosis of the lung." We presume that the author is not acquainted with this memoir, which is to be regretted, inasmuch as, with his extensive opportunities of observation, he could not have failed to have met with so many examples of this disease, were his attention directed to it, as would materially strengthen Dr. Corrigan's imperfect induction, and contribute to clear up the doubts which exist in the

minds of many of the profession regarding its nature, and the validity of his hypothetical explanation of it. We know some pathologists who can recognise in Dr. Corrigan's published cases nothing more than chronic pleuritis, with dilated bronchial tubes, a combination known to be not unfrequent. Such a limited view, however, of the origin of this morbid change is untenable, since, from the observations of Stokes, Hasse, and others, it appears that in some forms of pneumonia (the plastic), contraction occurs, arising from amalgamation of the effused lymph of hepatization with the parietes of the cells, the consequence according to Hasse being "permanent incapacity of the part for the office of respiration, gradual shrivelling of the pulmonary texture, sinking in of the wall of the thorax, and dilatation of the bronchial tubes throughout the previously hepatized lobes."

In a case of asthenic pneumonia recorded by Dr. Stokes, the contraction of the side was as great as in any case of empyema he had ever seen. We do not think the "slowness of resolution" will alone account for this, since in the most tardy instance of resolution of pneumonia we ever witnessed, the affected side, two years after the attack, measures a full inch more than the opposite. The true *rationale* is given by Hasse as above. The part performed by effused plastic lymph in these cases of cirrhosis, pleuritis, pneumonia, and phthisis, with early *flattening* of the chest (first attributed to this cause by Dr. Walshe), is a subject of much interest, and open to the investigation of pathologists.

In an analysis of the general signs of pleuritis it is stated that—

"The *decubitus* was on the affected side in forty-six cases; on the opposite in four; and indifferent in twenty-eight.

"*Pain* was not felt in twenty-eight; at the onset as a stitch in forty-eight; severe in nine; it was absent in seventy-two at the time of examination.

"*Dyspnœa.*—Even when not acknowledged by the patient, respiration was never less than thirty-two; in some cases reaching fifty-six in the minute.

"*Cough and Expectoration.*—There was cough in thirty-eight, with clear expectoration in most of them; and in nineteen it was muco-purulent."

The author does not seem aware of the value of this sign, or of the excellent observations on it of Drs. Green and M'Donnel.

"*Fever.*—Hectic, with night perspirations, in ten cases.

"*Pulse.*—Generally small; often sharp; never under 80; sometimes 160.

"*Terminations.*— With a view to ascertain whether chronic pleurisy is a frequent precursor of phthisis, care was taken during some years to trace the results of these seventy-eight cases. Ten have been lost sight of; of fifteen others it is only known that they are living; of the remaining fifty-three not one has become phthisical."

We have next a chapter on *plastic pneumonia*, "in which lymph is deposited with little or no fluid, and which may be looked for in two varieties in an aggregated and in a disseminated form;" such a form, the analogy of inflammations, our author thinks, requires; and, "no such state having been described, it is proposed to deduce its existence from the following cases."

We think we could point out several writers who have described this form of inflammation under different names, as chronic, fibrinous, croupy, albuminous, &c. Some of the peculiar characters observed have been:

1. Its appearance under a typhoid type (as in several of the cases in the present work). We have often seen this pale, grey, or yellow infiltration in typhoid pneumonia.

2. Such solidification has been noted to be *dry* and difficult of resolution, from the absence of the serous infiltration by which hepatization is resolved.

3. As being therefore liable to two forms of termination,—one by transformation into tubercle, the other into a mass of crude coagulated fibrine, with shrivelled pulmonary tissue"(*a*).

4. As being often associated with tuberculosis, in which case, according to Hasse's observations, it commonly occupies the lower lobes, meeting the march downwards of the tubercle which occupies the upper portion of the lungs.

5. As occasionally existing in the disseminated form, distinct air vesicles being filled with the grey matter (as in the author's ninety-third case), simulating acute phthisis, and probably always present, and constituting the predominant lesion in that disease. It might be added, that this is probably the case in all cases of cured phthisis, especially those cured by mercury. (Some of the author's dissections of arrested phthisis support this view).

A large portion of the chapter on phthisis is devoted to the consideration of the mutual relation, order of sequence, &c.,

(*a*) Researches on Pneumonia and Tubercular Infiltration, by Dr. F. Zehetmayer; translated by Dr. Battersby. Dublin Med. Journal, vol. xxvii.

of tubercle, and this grey inflammatory induration, when occurring in the same subject. It is several years since Dr. Graves said: "I do not use the ordinary nomenclature of writers on consumption: I do not recognise the terms 'tubercular inflammation,' as connected with cases of this description; indeed I am inclined to think that the whole theory of inflammation being excited in the lung, by the presence of tubercles, is founded on erroneous views."(*a*) Our author would seem to be of the same opinion.

"A maid servant, aged 35, of intemperate habits, stated that for some months she had suffered from cough and dyspnœa. The greater part of the left side sounded dull on percussion; an occasional click was heard under the left clavicle, but very little respiratory murmur.

"*On inspection*, both lungs were congested, but the upper half of the left lung was in a state of grey and slate-coloured induration, and in the midst of it were several small tubercular cavities, and some few yellow tubercles. No trace of tubercle was found in any other part of the body."

From this and similar cases the author infers that,

"We cannot suppose that the few tubercles which existed could have given rise to such an amount of irritation as to have produced the great mass of grey induration. Besides, similar matter was found in the other lung without a trace of tubercle near it.

"It has never been denied that, in the form of granulation, the grey matter precedes the formation of yellow tubercle; and, I think, it will be allowed to follow, from the above cases, that the same takes place when the larger masses of it are found in the lung surrounding a few tubercles. It is, indeed, the same process as that which goes on when tubercles are found in false membraneous bands, which must have existed before the tubercles could have been deposited in them or formed out of them.

"Considerations, therefore, based on the general appearance of the grey matter, its mode of development in certain cases, and its minute structure, lead me to conclude that, in all its forms, it is an imperfectly organized substance, which, in the absence of the tubercular diathesis, may remain stationary, or may rise slightly in the scale of organization, but which, under opposite circumstances, may descend in the scale, and be converted into, or be displaced by, tubercular matter. In this sense it may in some cases be the first stage of tubercle, but not a stage, as supposed by Laennec and Louis, through which tubercles must necessarily pass before acquiring their own peculiar character, nor must it of necessity be followed by tubercle.

(*a*) Clinical Medicine, p. 603.

"It is impossible to determine by what process yellow tubercle is developed in the midst of the grey matter; whether it is deposited in it as a nidus, in the same manner as earthy salts are deposited in atherome, or whether the grey matter is transformed into it as lymph is converted into pus. Both suppositions may be reconciled with our present knowledge.

"It follows, from what has been shewn as to the mode of development of tubercular matter in the lungs, that it must be preceded by local congestion. Vogel considers it to result from the same causes as fibrinous dropsy generally, and to be preceded by local hyperæmia of the participating capillaries. Andral states that the pre-existence of congestion may be admitted, but cannot be demonstrated. Capillary congestion may be distinctly perceived, preceding the deposition of typhic and scrofulous matter in the mesenteric glands. It is more difficult to observe this in the lungs; but, in acute phthisis, it may be occasionally seen. In chronic phthisis, the results of such congestion alone meet the eye; but it will hardly be denied that the deposition of lymph, although of a low character, proves the existence of some amount of congestion. Besides this, physical signs of congestion are often observed at the summit of the lungs, which, in some cases, totally disappear, and are in others succeeded by tubercular cavities. The progress of such congestion may be traced in the cases above detailed.

"Whilst the meaning attached to the word *inflammation* is so indefinite as it is at present, it would be useless to discuss whether the action which accompanies the deposition of tubercle is of an inflammatory nature or not. Dr. Hughes Bennett very aptly remarks: 'If by the term inflammation be understood pain, heat, redness, and swelling, or the presence of lymph or pus, then tubercle is not inflammatory. If, on the other hand, we consider that the essential phenomenon of inflammation is an increased exudation of the blood plasma, then tubercle must be regarded as an inflammatory product.'(*a*) The importance attached to this question, which has engaged the attention of so many eminent men, may be supposed to arise from its bearings upon treatment. It will be shewn, however, that, in this point of view, it is of very little importance, the grand question being, whether tubercles arise from a sthenic or asthenic state of the system, inasmuch as inflammations, occurring in each of these states, demand an almost opposite line of treatment, the one from the other.

"It may be inferred, then:

"1. That the deposition of tubercular matter in the lungs depends on a peculiar asthenic state of the constitution, the *tubercular diathesis.*

"2. That it is preceded by *local hyperæmia.*"

We consider these observations, on a question which has been

(*a*) For a similar view of the inflammatory origin of tubercle see Dr. Leeper's Report, in the seventh Number of this Journal.

long debated, though but little elucidated by medical writers, highly interesting and important. Our author's views regarding the relations of tubercle and inflammation, appear to approach closely to those put forward by Dr. Evans in his Lectures on Consumption; and, as might be expected, there is a similar correspondence in the mode of treatment recommended by each; the principal object being the removal of the phthisical predisposition by improving the constitution by employing nutritious diet and tonic regimen, and by such a selection of the means required for allaying irritation, or removing inflammation of the lung, as shall not interfere with this primary object. "In short, the principle of treatment," says our author, "suggested by the nature and known causes of phthisis, is *the union of tonic and sedative remedies.*" He states that the number of cases of phthisis treated by him between the close of 1835 and the commencement of 1846, amounted to nearly 4000!! At the latter period thirty-one survived, in whom the most unequivocal signs of a tubercular cavity had been observed. Of ten of these it is only known that they are living. The other twenty-one have been seen by him within the last two years.

"Of these, eight still labour under the disease in a chronic form; four are tolerably well, but expectorate muco-purulent fluid, and have signs of a cavity remaining. The other nine enjoy an average amount of health, have slight cough, with expectoration of pearly grey mucus, and have lost all traces of a cavity. There is in most of them, however, coarse and feeble pulmonary sound in those situations where a cavity had existed.

"Of the persons who survived in 1846, three-fourths were between the ages of 35 and 45, and only two were under 20, a fact tending to confirm the opinion that the chances of recovery increase with age. It has been long known that the disease runs a more chronic course in proportion as the patients advance in years, and it is therefore probable that recovery takes place more frequently, at this period of life, in consequence of time being allowed for the removal of the constitutional derangements upon which this disease so peculiarly depends."

The directions for treatment,—preventive and curative,—are uniformly judicious. We have only space for the following;

"*The Acute Form of Invasion* demands prompt and energetic measures. We cannot trust to the constitutional treatment alone, for unless the progress of tuberculization, and of plastic vesicular pneumonia, be quickly arrested, the patient will die of suffocation. When the dyspnœa is urgent, and the fever is running high, we can

hardly refrain from the use of the lancet; but even here I have seldom employed it, because experience has taught me that the most acute inflammation of the thoracic viscera may be often succesfully treated without it.

"If we abstain from blood-letting, then, we must have recourse to mercurialization; and for this practice we have strong grounds, since a glance at the progress of acute phthisis shews that the grey granulations materially hasten the fatal termination, by clogging up the lungs before tuberculization has taken place to any great extent. Now mercury is our sheet-anchor in promoting the absorption of plastic lymph. In the following case this treatment was adopted."

In this case, which presented all the characters of acute phthisis, rapid mercurialization by inunction was followed by recovery. As the author adduces but one such example of the success of the practice from his own experience, we think he should, in justice to his readers, have referred them to the published experience of others, who, like Drs. Graves, Stokes, and Munk, have recorded their more numerous trials.

Of acute phthisis, the author has met with twenty examples. He states that in only three of these was he able to detect the progressive supervention of dulness on percussion, upon which Dr. Stokes, in a great measure, founds the diagnosis of this disease:

"It may be argued," says he, "that the dulness observed in the three cases above mentioned, not arising from the ordinary causes, must have depended on this unusual cause, the rapid increase of the solid matter in the lungs in the shape of granulations and tubercles; and such, doubtless, was the case. If, therefore, this sign were of frequent occurrence, it would be of great value as diagnostic of the disease in question. As such it has been brought forward by Dr. Stokes, and, in his experience, this sign is seldom absent, and is not difficult of discovery. It was only perceived, however, and that most faintly, in three of the twenty cases of acute phthisis and grey granulation, nor does it appear to have been observed more frequently by Louis. This is easily accounted for. Supposing the sonoriety of the chest to be considerably diminished, it may be very difficult of appreciation. We have, in truth, here no parts of the chest to compare with each other, for not only are both sides similarly affected, but also every part of each side. The value of differential examination, therefore, so strongly insisted upon by Dr. Stokes, is here altogether lost to us. The only comparison we can make is that of time, which requires that we should carry in our memory the exact amount of sound emitted from the chest on percussion at a previous examination. The difference may sometimes be appreciated, but I believe it will very seldom be discovered, even by the most practised ear. This sign may possibly possess some value in

the hands of so skilful an auscultator as Dr. Stokes is well known to be, but as a guide to the bulk of the profession it must be comparatively useless."

Admitting the justice of the tribute here paid to Dr. Stokes's skill as an auscultator, we must yet repudiate the notion that any very great refinement in skill is *necessary* for this diagnosis. Dulness may not, and we know is not always present (why,—it might not be difficult to explain); but we may remark that the author makes a very imperfect use of percussion as a means of diagnosis, when he does not recognise its phenomena as matter of *tact*, but only as matter of *sound*. In these and other cases, at the same time that little or no difference of sound may be heard by the bystander, the delicate touch of the practised auscultator will appreciate a *resistance* to the finger resting on the inelastic parietes, which, a few days or hours before, he felt freely vibrate under the stroke. No mention being made, throughout the volume, of this important *element* in percussion, we beg to refer the author a second time to Dr. Cowan's excellent little work on "Physical Diagnosis," in which it receives the notice it deserves(*a*).

The importance of the subjects treated of must plead our excuse for so lengthened an analysis of this work. We have derived much pleasure and instruction from its perusal, and we warmly recommend it to the notice of the profession.

Contributions to the Pathology and Practice of Surgery. By James Syme, F.R.S.E., &c. Edinburgh, Sutherland and Knox. 1848. 8vo. pp. 336.

Observations on some of the Parts of Surgical Practice. By John P. Vincent, late Senior Surgeon to St. Bartholomew's Hospital. London, Longman. 1847. 8vo. pp. 364.

A System of Practical Surgery, &c. By John Lizars. Second edition. Edinburgh, W. H. Lizars. 1847. 8vo. pp. 503.

Mr. Syme, in his Preface, informs us, that the reasons which have induced him to republish his various essays, are: 1. Because, being an hospital surgeon, "he felt it peculiarly incumbent upon him to write for the information of his professional

(*a*) Dr. Walshe also, at p. 168 of his Diagnosis of Diseases of the Chest, treats of it fully, and remarks that to those whose sense of touch is more delicate than that of hearing, this source of diagnosis is of especial value.

brethren." 2. Because "the papers contributed with this view, during the last twenty years, have appeared in various periodical publications, in the volumes of which they are now nearly, if not quite, beyond the reach of most readers;" and lastly, because he has "been frequently requested to publish them in a separate form." These inducements, it appears, were all-powerful with the Author, but we imagine that many of his professional brethren would have thought as highly of his judgment had he permitted the thirty-one articles which compose the book to remain in "the obscurity in which," to use his own words in reference to the labours of others, "they had very properly been allowed to slumber," and to which they "will probably soon return."

The work consists, as we have said, of thirty-one articles, and embraces a variety of subjects, from the manufacture of Mackintosh cloaks to the excision of the upper jaw.

The first article "On the Solution of Caoutchouc," is interesting as an exemplification of the dependence of important events upon trivial causes. The author informs us, that having from an early age taken much interest in chemical pursuits, he became impressed with the importance of obtaining a cheap solvent of caoutchouc, and that at length, after many trials, he succeeded in converting a silk cloak into a waterproof pitcher, by turning up its skirt!

This was an "object of wonder to all who saw it," and his friends recommended him to take out a patent for the discovery.

The Author addressed, however, a letter upon the subject, to Dr. Thompson, for insertion in the "Annals of Philosophy," in 1818; and he now complains that this letter, though transmitted in the beginning of March, did not appear in that Journal, which was published monthly, until August; and that not long after Mr. Mackintosh took out the patent, and obtained the credit and profit of the discovery, leaving to Mr. Syme nothing but "the confidence which results from successfully struggling with a difficulty."

Had Dr. Thompson published this important letter at once, instead of, with inexcusable delay, holding it back from March till August, in all probability the destiny of our Author would have been changed; we never would have heard of "a Mackintosh,"—for "a Syme" would "have afforded complete protection from the heaviest rain;" and a silken pitcher would have graced the hand of the Highland maiden, as she tripped along the mountain glen for water from the crystal stream.

It is not to be expected that we should give an analysis, however brief, of the remaining thirty articles contained in the volume before us, the great majority of which are to be found in the Edinburgh medical periodicals, where, however, the Author states they are quite beyond the reach of most readers. The statement is by no means complimentary to the editors of the Journals.

In the second article, which treats of "Gangrena Senilis," a plan of treatment is recommended, which has, at all events, the charm of novelty, viz., withholding from the patient *nutritive food*. The Author is "aware that the proposal of this starving plan may appear rather startling," but a trial is requested. "The advantage almost immediately derived from abandoning the use of nutritive food is so obvious, that this plan of treatment has required only a commencement to insure its continuance."

The third article treats of "Excision of the lower Jaw," and contains one important practical precept, for which, however, the profession is indebted to Mr. Cusack. We allude to the advantage of opening the joint from before, in cases where it is necessary to disarticulate the condyle ; and we are glad to find that the Author has given Mr. Cusack the credit of the suggestion:

"I think Mr. Cusack is entitled to much praise for insisting on the propriety of opening the articulation from before, since a wound of the internal maxillary, or even the temporal, is otherwise almost inevitable. Thus Mr. Liston, in the case detailed in the last Number of this Journal, opened the joint from behind, and found it necessary to tie the common trunk of the temporal and internal maxillary,—in short, the external carotid."

In the next article the Author treats of the power of the periosteum, in cases of necrosis, to form new osseous matter independently of any assistance from the bone itself. We thought that this was a settled question, even at the time that this article was first published (1837). The Author, however, states that "different sides of the question are maintained by teachers and writers in this as well as in other schools of medicine." We suppose he alludes to Dr. Knox, who refers the production of the new bone to the vessels of the remaining portion of the living bone(*a*). The majority, however, of pathologists who support the opposite view of the subject is so great, that Mr. Syme's observations and experiments appear to us

(*a*) Edinb. Med. Surg. Jour. vol. xviii.

to have been quite unnecessary, more especially as they contain nothing new. We might refer to the names of Havers, Duhamel, Troja, Swencke, Fougeroux, Marigues, Bertin, Blumenbach, Desault, Koehler, Stanley, Macartney, and numerous others in proof of this assertion. We have ourselves long acknowledged and been familiar with the power of the periosteum of itself to form the new bone, and have seen in the museum of the Richmond Hospital of this city numerous preparations decisive of the question. We think, therefore, that Mr. Syme was guilty of needless cruelty to animals, when he thus cut out the bones of three dogs.

The fifth article treats of "Ulcers of the Leg;" and we give the Author full credit for the mode of treatment which he proposed in 1829 for the relief of indolent or callous ulcers. "This was to apply a large blister over the sore and neighbouring swelled part of the limb." We have repeatedly witnessed the valuable and permanent advantages derived from this method of treating these troublesome and obstinate ulcers.

We would wish to have alluded to the statement of the Author, that the operation practised by Velpeau for the cure of varicose veins is more sure, safe, and effectual, than that recommended by Sir Benjamin Brodie, and to have recorded the fatal results which have in many instances followed the operation of Velpeau in his own wards at La Charitê; but our space will not permit us to do so. We are glad, however, to find that Mr. Syme prefers trusting to palliative treatment in cases of "Varicose Ulcer," rather than having recourse to operations upon the veins, all of which are fraught with peril.

We can notice but briefly the criticisms upon the mode of treatment recommended by Sir Benjamin Brodie for abscess in the tibia. "There is reason to fear," says Mr. Syme, "that operations still more severe (that is, than the cautery, the rasp, and the chisel), and, if possible, still less warranted, have been performed on account of chronic swellings affecting the periosteum and bone, through the proposal of Sir Benjamin Brodie, to trepan the tibia for the discharge of matter pent up in its cancellated texture." Mr. Syme considers the operation unnecessary, painful, and dangerous, and that it is most difficult to distinguish the disease from chronic periostitis; yet he admits that he has never seen this disease, though looking for it many years, and he regards "its absence from the field of observation submitted to him, as a proof that it must be a rare event in the practice of surgery." We may mention here that Dr. Hutton has publicly performed the operation three times within the last year; and that in two of the cases complete re-

covery followed the evacuation of the abscess. Mr. Syme regards the operation as unjustifiable, because chronic abscess in the tibia is liable to be mistaken for chronic periostitis, "which admits of remedy by the use of gentle means." We imagine that the fault here lies, not with the distinguished author who has described the disease clearly, and proved the efficacy of the plan of treatment which he has proposed, but with the surgeon who is unable to establish the differential diagnosis. We are ourselves convinced of the value of the method of treatment recommended by Sir Benjamin Brodie, "*though it may not, perhaps, be the best adapted for the lowest capacity of surgical practice.*"

We now come to the fourteenth article, which treats of popliteal aneurism, and in which the Author notices "the attempt which has been lately made to introduce compression of the femoral artery, instead of its ligature, for the treatment of aneurism." The leading features of this article are, its being destitute of argument, and replete with erroneous assertions and disgusting egotism. The Author thus introduces the subject: "The laborious, distressing, and tedious procedure, which has lately been brought again into notice by a *surgeon of Dublin*, will probably soon return to the obscurity in which it had very properly been allowed to slumber." Our readers, perhaps, do not require to be informed that the surgeon of Dublin, who re-introduced this practice in modern times, is Dr. Hutton, an accomplished operator, and one of those enlightened practitioners who do not resist improvement because it is new, and whose numerous operations upon the carotid, subclavian, and femoral arteries, prove that he has not had recourse to the method of compression from an inability to "*practise a higher exercise of his art.*" Mr. Syme asserts that those who have treated popliteal aneurism by compression (among whom he, of course, includes the late Mr. Todd and Mr. Liston, together with Messrs. Cusack, Kirby, O'Ferrall, Porter, and others) have done so because it was the mode "*best adapted for the lowest capacity of surgical practice ;*" and concludes the article by observing: "*Let every man act according to his ability ; but let no one who feels it necessary to choose inferior means throw blame upon those who feel warranted to practise a higher exercise of their art.*" We will not insult these gentlemen by entering into any comparison of their merits and reputation as surgeons with those of Mr. Syme, who has assumed to himself a superiority which neither the profession nor the public have awarded him, and who seems to think that the greatest merit of the surgeon consists in the unsparing use of the knife.

"The highest triumph of the scientific surgeon of the present day," says the editor of the Lancet, "is the zeal with which he seeks to dispense with the use of the knife; and *second to this* he makes the power of being able to use it successfully when required. Never, in these respects, did operative surgery stand higher than it does now, whether we regard the substitutes that are made to take the place of cutting operations, or the singular success with which operations are performed. It is, then, strange to see, in this onward progress, an individual standing apart, seeking to be conspicuous by his isolation,—to be original by his singularity. The pillar of salt to which we refer is Mr. Syme, a surgeon who would be surprised were we to withhold from him the epithet *distinguished.*"

The following passage affords an average specimen of the clearness of the Author's style, and of the facility which he enjoys of expressing his ideas, so as to render them perfectly intelligible, even to the "lowest capacity." At page 188, after having detailed the case of Walter Brown, the author makes the following startling statement: "*In the case now related, I tied the femoral artery for the sixteenth time, without experiencing any bad effects from the operation.*" Here, certainly, we freely admit that most operators have been surpassed, for we are perfectly sure that no other person has ever tied the femoral artery *sixteen* times in the same case. With respect to the latter part of the statement, we have no doubt of its correctness, for we can easily suppose that Mr. Syme never experienced any bad effects from an operation which was never performed upon him.

Of the truth of the proverb, that pride goes before a fall, this surgeon of the highest capacity, this successful operator for aneurism, has lately afforded a sad confirmation. In the Edinburgh Monthly Journal of Medical Science for December, 1847, will be found the particulars of a case of tumour of the neck, mistaken for aneurism of the carotid artery, and for the cure of which that vessel was tied by Mr. Syme. The patient died of hæmorrhage upon the twelfth day after the operation. The case was one of hydrocele of the neck, a disease with which Mr. Syme does not seem to be acquainted: for information upon the subject we would refer him to the memoir of Professor Maunoir, of Geneva, and also to that of Dr. O'Beirne, of Dublin, published in the sixth volume of the Dublin Medical Journal. Let it not be supposed that we are desirous to attach blame to Mr. Syme for the error which was committed in this instance, for we have more than once seen a false diagnosis of this disease made even by surgeons of very great experience. We cheerfully give the Author the full share of credit to which he

is undoubtedly entitled for his candour in publishing the case, but we trust that it may prove a useful lesson to him, and may have the effect of lowering that spirit of egotism which characterizes most of his writings.

The twenty-second article treats of the "Removal of cartilaginous Bodies in Joints,"—*from* joints we suppose the Author means. This important subject is disposed of in three pages, which contain one case which was published (1841) in support of the efficacy and safety of the mode of treatment recommended by the author, before the termination of the case or the recovery of the patient. The operation proposed is "puncturing the skin merely, and opening the synovial membrane freely, so as to let the cartilage escape, and then pushing it into the cellular substance, where it may become adherent, suffer absorption, or occasion an abscess under the skin."

The patient (aged 37) had a moveable body in the knee-joint. The operation was performed on the 1st of February, 1841; on the 3rd he had a rigor; on the 5th red lines extended from the knee to the groin, and the inguinal glands were enlarged; on the 8th a large abscess, which had formed over the cartilage, was opened; on the 11th, as the discharge continued copious, the cartilage was extracted by means of a sharp hook. The account of the case terminates thus: "The patient *seems* in a fair way of recovery." It is obvious that this patient (if he did ultimately recover) *escaped*. But we are not furnished with any further record of the case, which the Author informs us was republished chiefly on account of Mr. Liston's case, which appeared in our Journal for February last.

It is not worth while stopping to inquire whether this operation was first proposed by the Author, or by M. Goyrand, of Aix, or modified by Mr. Liston; for we look upon *all* operations which have for their object the removal of foreign bodies from joints in pretty much the same light as upon operations for the cure of varicose veins; and are of opinion that they are not only liable to dangers which peril the limb or life of the patient, but are often performed in ignorance of the true pathology of the disease, and sometimes undertaken by those who are operators and nothing more.

The twenty-third article (and it is the last we shall notice) gives an account of a case of "Spontaneous varicose Aneurism," formed between the abdominal aorta and the vena cava. This case was published in 1831, and is stated by the Author to be "the first instance to be found on record of a varicose aneurism being formed spontaneously." It is always imprudent upon the part of an Author to state that any given case is the first of the kind that has been recorded; for should the

assertion prove to be incorrect, he either lays himself open to the charge of wilfully concealing the truth, or he renders it evident that he is unacquainted with the history and literature of the subject upon which he has written, as Mr. Syme obviously is in the present instance, for we would be very sorry, indeed, to impute to him a *suppressio veri.*

We will not quote the case reported by M. Sue(*a*), and presented to the Faculty of Medicine of Paris, by MM. Payen and Zink, as one of aortic aneurism which had burst into the pulmonary artery, for doubts have been thrown upon it by subsequent writers; but we would refer Mr. Syme to Dr. Well's case of spontaneous varicose aneurism of the ascending aorta and pulmonary artery, recorded in 1812, in the third volume of the Transactions of the Society for the Improvement of Medical and Chirurgical Knowledge,—p. 85.

We cannot terminate this notice more appropriately than by quoting the following remark from Mr. Vincent's recently published "Observations:"

"The great importance which is attached to operative surgery does not, in my mind, confer any compliment to the scientific character of surgery. All men are, perhaps, desirous of possessing the ability of accomplishing some purpose that may draw to them admiration. *Surgeons, whose qualities of mind hardly rise to that level in which intellect can direct them to real scientific studies, fix upon the display of operative surgery as a department in which they think to shine.* In estimating the success of operations, we find that a large proportion are unsuccessful, although performed upon principles that are admissible; but, what is very startling, a vast number are continually performed, which would be inadmissible if science had enlightened surgeons, and enabled them to form correct judgments. Surgery, as a science, would decide many questions in the way of avoiding operations. *The surgeon, too eager for performing operations, is not likely to impart scientific principles to his art.*"

We understand that Mr. Syme has left the northern for the southern metropolis. We trust that he will not bring with him all his qualities as well as his qualifications. We would, in the most friendly spirit, advise him to leave his egotism behind him, and endeavour to cultivate, under the influence of a more genial climate, that most becoming virtue, modesty. We fear, however, that there is truth in the saying of the heathen poet:

"Cœlum, non animum mutant," &c.

In the republication of his paper upon Lithotomy he does not appear to have understood the hint we gave him for his plagiarism of Daunt's prostotome.

(*a*) *Bulletin de la Fac. de Méd. de Paris*, vol. ii. 1809, No. 8, p. 128.

To turn from the compilation of Mr. Syme to the work of Mr. Vincent is indeed a pleasure and a great relief. Every page of this learned treatise bears the impress of the scientific surgeon and accomplished scholar. The introductory chapter, upon the claims of surgery to be considered as a science, evidences an intellect of a superior order, and a highly cultivated and reflecting mind.

The work is not intended as a systematic treatise upon surgery, but is rather an effort to reduce to the principles of a science the treatment of various surgical diseases and accidents, for observing which the position of the Author, as surgeon to St. Bartholomew's Hospital for so many years, afforded him ample opportunity. It is not the ephemeral production of the young aspirant who writes before he practises ; on the contrary, it is the matured composition of the experienced surgeon and the well-informed man, who has practised long and extensively, both in public and private, before he has ventured to lay before the profession the results of his observations.

At the conclusion of the introductory chapter the Author remarks:

"The following observations have no pretensions for having a systematic character, being merely the cursory notice of views formed in a long practice. The allusions to the cases that are noticed are not intended to give a full description of them, but to bring the condition of disease in such relations with each other that principles of a scientific character may be established."

We shall make but a few extracts from the work, for the entire treatise should be carefully read both by the student and the practitioner.

After a learned dissertation upon the association of muscles in their actions, the Author observes:

"I must now impress upon the reader that what has been explained as to muscular action is very much with a view to guide the surgeon in adopting the best positions of the limbs or of the entire body, in injuries and other states where it is necessary to guard against the interference of muscles in the course that may be proposed for the line of treatment in any one case. Thus, as all muscles are, for the most part, exercised in the forward movements of the body, and as very few people have much use of the muscles that act in a sideway motion, so when any one muscle is used in this forward motion, there are, by reason of the association of actions, many others called into action, to the injury, probably, of the case. Whereas, when the patient is placed on his side, owing to the disuse of the muscles calculated for this kind of movement, the whole system of muscular action is more likely to be in repose, and has less chance of being excited by the laws of association.

"There is yet another law of muscular action that is to be constantly attended to in practical surgery. It is that the relaxation of muscles is to be effected by attending to their positions when they are required to throw out their strongest exertions; and not, as usually is supposed, by approximating their attachments. It is a fact we might almost expect as the result of the powerful influence of association under which they act, and which, whilst this combination exists, regulates the exercise of their forces. Thus the powerful gastrocnemius muscle exerts its greatest strength when in progression it is acting to advance the body, by throwing its weight upon the toes or metatarsal part of the foot. To do this the foot is extended, which is the same thing as approximating the attachments of the muscle. Now that case which is called dislocation of the foot backwards, and in which the tibia is presenting in front of the astragalus, offers an exemplification of this position. Of course the gastrocnemius has its lever of action increased in power as the foot lies extended, by the heel projecting so much behind; which advantage, joined to that of its habitual exertion when in this direction, forms very great opposition to the foot being brought to a flexed position; but yet this is not difficult, and the surgeon will sensibly feel the cessation of its action, the moment it is brought to a right angle with the axis of the tibia. This is owing to its being then in a state of least action, in the usual exercise of its powers. Another exemplification is that of the fracture of the humerus just below the attachment of the deltoid muscle."

Having given a short outline of some propositions which may be regarded as preliminaries to practical surgery, the Author then proceeds to offer his views on the treatment of most of the accidents and diseases which come under the observation of the surgeon. His remarks upon the reduction of dislocations, and upon the position of the limb, and the employment of bandages in fractures, though somewhat novel, are highly interesting and important, and we recommend them to the special consideration of the reader. The only fault we are justified in finding with Mr. Vincent's work is for the rude, unartistic, lithographic plate which forms its frontispiece.

When treating of the varicose ulcer, the Author very properly reprobates all operations upon the veins, upon the ground of their inutility:

"I have always been at a loss to understand the reasoning which has led to the adoption of the practice of obliterating a vein in a varicose limb. Varix is not a mere disease of a part of a vein, which the tying of the tube, or the removal of the part, can get rid of. It is the derangement of a system of tubes designed for conveying the blood to the centre of the circulation; and one condition for properly carrying this on is, that the space in which the fluid is to move should be duly capacious. The breaking up of one channel must

throw more fluid into those that are left open; and as the relief of all tubes under disease is just in proportion to the undisturbed course which the contents of the tube are allowed to take, so I apprehend this practice is really calculated to keep up the varicose state of the limb. I have seen cases where varicose veins of the leg have been tied or divided, and where portions have been removed; but as soon as the patient got about afterwards, I have observed that the leg has been embellished with fully as many diseased vessels as before these several operations."

These observations fully agree with our own experience. The author expresses himself in favour of friction for the relief of varicose veins; and recommends the daily use of the flesh-brush, as being more efficacious than bandages or any other contrivance, in strengthening and restoring these vessels.

There are many other points of great practical interest in the work, but our space will not permit us to allude to them; we shall therefore conclude by recommending Mr. Vincent's "Observations on Surgical Practice" to the careful perusal both of the student and the practitioner.

The work of Mr. Lizars is an attempt to compress into one volume of about 500 pages, a "System of Practical Surgery," including all the recent discoveries and operations. We have never known nor expected such an effort to be attended with success, for the descriptions of diseases and accidents must necessarily be so extremely concise as to be comparatively useless as a system to the practitioner, and of but little advantage to the student. The work before us is a second edition, but upon comparing it with the first we cannot find that anything of importance has been added; and that it has been executed with carelessness is evident from the circumstance of the Author still terming the Surgeon-General of Ireland, "Dr. Crampton," —p. 89. It is true we live here in a remote and obscure corner of the civilized world; but still the intelligence that Her Majesty had, several years ago, been pleased to confer upon our distinguished countryman a mark of her royal favour, by creating him a Baronet, might have reached the ear of a professional brother in the metropolis of the North.

Neither does the Author appear to us to have bestowed too much attention upon the style of his writing; for instance, he informs us, at page 181, that "*a bee-hive attacking an unfortunate individual may prove fatal.*"

And again at page 189:

"Neuromatous tumours are formed on the extremities of the divided nerves, where not sufficiently covered by the soft tissues; but all nerves thus cut produce elegant ganglionic swellings, *free*

from pain, from which nervous filaments proceed to the contiguous tissues; these tumours, varying in size from a common bean to a walnut, *are remarkably sensitive and acutely painful.*"

But these inaccuracies are trifling compared with the positive and serious errors which are to be found scattered through the volume before us, and which it is our unpleasant duty to expose.

At page 128, the Author states that in fractures of the neck of the femur, "if neglected, *the toes become ultimately inverted, from the power of the adductor, and relaxation of the extensor muscles.*" We deny the truth both of the assertion and the explanation: the adductor muscles are *evertors* of the limb.

At page 154 it is stated that, in luxation of both bones backwards at the elbow, "*the fore-arm is extended.*"

At page 157, the toes are said to rest "*on the great toe of the sound limb*," in cases of luxation of the head of the femur, and upon the dorsum of the ilium; and "*on the tarsus of the sound foot*," in those where the head of the bone is forced into the sciatic notch. The reverse is the truth.

At page 148, *the external semilunar cartilage* is said to be the one most frequently displaced. Every student that has ever heard anything of the matter, knows that in the "internal derangement of the knee-joint" described by Mr. Hey, it is the *internal* cartilage that is displaced.

At page 219, the Author states, that "Sir Astley Cooper advises the operation of trephining in all cases of compound fracture of the cranium, because inflammation is very liable to supervene." The following are Sir Astley's words: "The rule, therefore, which I always follow, is this: when I am called to a fracture with depression, which is exposed to view, I generally use an elevator, and *very rarely the trephine.* If, however, one bone is wedged within the other, I apply the trephine for raising the depressed portion of bone."(*a*)

At page 221, after having described briefly the symptoms of concussion, the Author states: "We ought to bleed the patient immediately after receiving the injury;" and among the advocates for this practice he mentions Sir A. Cooper. Again we will quote Sir Astley's words: "You are to use bleeding as a means of preventing inflammation; *but you are not to resort to it as a matter of course, the moment you are called to a patient under concussion.* A man falls from his horse, and the instant he is picked up from the ground, some surgeons think it neces-

(*a*) Lectures on Surgery, p. 133. Ed. 1830.

sary to take the lancet from their pocket. *This conduct is quite irrational.*"(*a*)

At page 180, we are informed that in traumatic tetanus the patient complains of increasing pain in the wound, which becomes inflamed; that the pain extends to the neighbouring parts, is increased on pressure, and darts along the nerves; that the muscles of the abdomen are affected *after* those of the arms; and that the peculiar expression of the countenance is a symptom *soon followed by death.*

At page 130 the Author states that fracture of the lower extremity of the radius is "to be treated as the preceding:" that is, fracture of the radius and ulna in the middle of the fore-arm.

We might have alluded to other errors which the Author has committed, but the preceding extracts furnish sufficient evidence of the correctness of our assertion.

One or two examples of the conciseness of the author's descriptions, and we are done:

"Luxation of inferior maxillary bone. One or both condyles may be displaced forwards, and *the disfiguration of the countenance produced shews the nature of the injury.*"—p. 161.

At page 180 the peculiar expression of the countenance in tetanus is thus described: "The face presents a horrid grin." What a clear and distinct idea of the condition of the features in luxation of the lower jaw and in tetanus is here conveyed to the mind of the student who has never seen either the disease or the accident! We know of but one parallel to it: when the immortal Pickwick suddenly disappeared through the ice, Mr. Tupman, by way of conveying to any person who might be within hearing the clearest possible notion of the catastrophe, ran off across the country screaming, "Fire! Fire!!"

There is, however, one redeeming quality in the work; it is amply furnished with finely executed engravings, illustrative of almost all the operations that the surgeon is called upon to perform, and we cannot help thinking that the Author would have acted much more wisely had he brought out the present edition in the form of a treatise upon operative surgery.

(*a*) *Loc. cit.* p. 121.

PART III.

REPORTS, RETROSPECTS, AND SCIENTIFIC INTELLIGENCE.

REPORT

ON THE PRESENT STATE OF VEGETABLE PHYSIOLOGY.

By JOHN ALDRIDGE, M. D., M. R. I. A.

PROFESSOR OF CHEMISTRY TO THE APOTHECARIES' HALL OF IRELAND.

In preparing a Report on the present State of Vegetable Physiology for a medical periodical, it is obviously desirable to keep in view the kind of information which may be most useful to its readers. Fortunately, the direction which has been given to physiological research within the last few years has rendered this task comparatively easy, by bringing the investigation of vegetable and animal functions into close proximity. Indeed, at all times, a knowledge of the phenomena of life, as displayed in plants, has been most essential to the animal physiologist; and those who have attempted to disentangle the complicated knot of human nutrition and secretion, unfurnished with the aids which comparison is capable of affording, have invariably fallen into errors, as mischievous as they were unfounded.

Physiology, or the science of living beings, embraces two classes of researches: the one seeks to ascertain the uses of organization, the functions of the various parts; the other consists in the investigation of the mode of formation of the different tissues and organs, the laws in obedience to which they are produced, and the conditions essential to their development. This latter class of researches, to which the name of Organogeny may be given, is, when pursued in the vegetable kingdom, the one most interesting to the animal physiologist, because it is calculated to throw most light on the parallel development of moving and sentient beings.

Late investigations have also shewn that the laws of normal nutrition and secretion, when operating in an unaccustomed and perverted manner, are the immediate causes of disease; that inflammation is an instance of abnormal nutrition; that heterologous growths spring up under the action of the same forces as those which produce indispensable organs; and therefore the pathologist is deeply

concerned in this branch of physiology. And inasmuch as the same forces which enable tissues to grow still continue to preside over them, when formed, until their dissolution, and endow them with the activity peculiar to living structures,—and as it is by modifications of these forces that disease arises, and by restoring their natural working that disease is cured,—the study of the conditions under which tissues are formed must necessarily be of importance to the therapeutist. It is, therefore, to this department of vegetable physiology, that I shall chiefly direct the attention of the readers of this Report.

As the phenomena of nutrition and irritability are peculiar to vegetables and animals, and unlike anything we can observe in the mineral kingdom, they have been attributed to the operation of a special force, to which various names have, at different times, been given, but for which we shall adopt the appellation which is the most modern, and the most consistent with analogy, namely, that of the *vital force*. This force differs from the purely physical forces, such as gravity, cohesion, heat, &c., on the one hand, by discriminating different forms of matter; just as it is at variance with the chemical and electrical forces on the other, by producing adhesion *only* between similar forms of matter. But, although it must be admitted that the vital is a peculiar force, it does not follow that all the phenomena observable in living beings are due to its agency. On the contrary, we are justified in ascribing all things in accordance with the ordinary laws of the physical or chemical forces to the operation of these more powerful and general movers; and in many instances we shall best explain modifications of motions truly vital, by supposing them controlled by the interference of the other forces. One of the most serious errors into which the merely animal physiologists have fallen has been the ascribing all phenomena occurring in an organism to a mysterious and undefined vitality.

John Hunter recognised the vitality of the blood; this was an important step in physiology. It led to the recognition of vital actions in the nutritive fluid, previous to the act of organization. Vegetable physiology extends this doctrine. We see the palmella, the nostoc, and the protococcus, at first gelatinous and semifluid, at length containing organized cells. In the intercellular passages of more complicated vegetables, we find the essential elements of food, the water, carbonic acid, and ammonia, already converted into sugar, gum, and proteine compounds. MM. Mirbel and Payen(*a*) have found that the mucilaginous contents of the youngest and last formed cells, are the richest in nitrogenous compounds. Harting(*b*) and Mulder(*c*) have ascertained that the older the cells become, the smaller the quantity of proteine matter found in their contents; but

(*a*) *Compte Rendus*, March, 1846.

(*b*) *Mikrochemische Onderzoekingen over den aard en de ontwikkeling van den Plantaardigen celwand medegedeeld.*

(*c*) *Versuch einer Physiologischen Chemie.*

this is in consequence of these compounds being absorbed into the structure of the cell wall. Nothing can be better proved than that the cytoblastema, or nutritive fluid out of which cells are formed, is produced without the necessary intervention of any organ,—that its formation precedes all organization.

The production of the cytoblastema in vegetables is a subject of great interest. Its constituents may be considered as essentially saccharine and proteine. Sugar, gum, dextrine, &c., may be considered as the same in chemical composition, and may, therefore, be included under the saccharine constituents. Albumen, gluten, and legumin, are also the same, or nearly so, in composition; these may be classed under proteine. The saccharine matters are solely composed of carbon, hydrogen, and oxygen; the proteine also contain the same elements, but in addition nitrogen, with minute quantities of sulphur, and, in some cases, phosphorus. The food of plants consists of water, carbonic acid, and ammonia. (Mulder considers that nitrogen is assimilated by vegetables.) The production of the saccharine constituents of the cytoblastema is easy to comprehend. The water and carbonic acid absorbed by plants contain the elements necessary for the formation of these compounds, only having an excess of oxygen. If we suppose the carbonic acid to become decomposed, and its carbon to unite with the elements of water, while its oxygen escapes, the proper elements for forming sugar or gum will remain, and exactly in the right proportions. The origin of the proteine compounds is not more difficult to understand. Sugar and ammonia contain the elements of proteine, with an excess of water and oxygen. Some of the latter probably replace he sulphur and phosphorus necessary for the formation of gluten or albumen, in some of the sulphates and phosphates absorbed from the soil. These changes are certainly in opposition to affinity; but we know that not unfrequently physical and electrical forces interfere with and control affinity. The inorganic compounds that enter into plants are placed in circumstances in which they never are in our laboratories. I think it unnecessarily mystifies the subject to ascribe these decompositions, as Baron Liebig does, to vital force. As far as we know of vital attractions, they occur between similar kinds of matter. Affinity acts in the opposite manner, and these decompositions and combinations so far accord with the operations of affinity.

The saccharine and proteine compounds contained in the cytoblastema are the common juices of vegetables. They are found in all plants, from an alga to an oak. They are found in the intercellular passages during the ascent of the sap; they constitute the contents of the youngest cells. The mould which grows on syrup is found to contain proteine(*a*), although the syrup itself contains neither nitrogen, sulphur, nor phosphorus. These elements must, in that case, be derived from the air. The escape of oxygen, we

(*a*) Mulder, *op. cit.*

perceive also, is synchronous with the very commencement of vegetation; the liberation of this element, we have seen, is equally necessary for the production of the saccharine and proteine compounds. No light is necessary for these reactions. Oxygen is exhaled by the rhizomorphæ of the Dresden coal mines, as well as by the trees of our forests; the subterranean root evolves it during its development, as well as the aerial branch. The absorption of carbonic acid and the evolution of oxygen are necessary to all vegetation. Further on we shall consider the source of the very large amount of oxygen thrown off from the green parts of plants, under the influence of light.

The proteine compounds, whether in solution or the solid state, can easily be detected by a very simple test. When a tissue, containing gluten or albumen, is immersed for a short time in strong nitric acid, it becomes tinged of a deep orange yellow, by the formation of xantho-proteic acid; by subsequent immersion in water of ammonia, the colour becomes more intense. By the employment of this test, Mulder and Harting have ascertained that the proteine compounds, at first abounding in the fluid cytoblastema, become at length absorbed by the solid tissues(*a*).

The cells of vegetables differ, in many respects, from those of animals. Some insects are said to contain cellulose, but starch has never yet been detected in the cells of any animal: the absence of starch granules may be considered a negative characteristic of animal organization. Another peculiarity of vegetable cells is the rarity of nuclei. Karl Müller has discovered the cause of these anomalies, to which we shall return further on. The cell-wall is at first composed, in every instance, of pure cellulose(*b*). We are enabled to recognise this substance by a test discovered by Schleiden. If cellulose be immersed in tincture of iodine, and then dried, it will merely become tinged with the yellow colour of the iodine. If subsequently it be plunged into strong sulphuric acid, the *cellulose* will turn blue. It would seem that the presence of the sulphuric acid causes the cellulose to change into a matter identical with that which composes starch. This change is not difficult to comprehend, inasmuch as starch and cellulose only differ in the one containing a little more of the elements of water than the other. A little water, added to cellulose, would produce starch; a little more water, added to starch, would produce sugar. We can perceive why these transmutations are so frequent. Sugar and gum are contained in the cytoblastema. The shifting of a few atoms of water is all that is requisite for converting these substances into cellulose. But this cellulose differs very much in properties from sugar or gum. It is capable of organization, which the others are not; its particles attract each other, and form a membraneous vesicle by their cohesion. As yet the proteine remains dissolved in the fluid contents of this vesicle.

(*a*) *Op. cit.* (*b*) Harting and Mulder, *op. cit.*

Mulder and Harting consider that they have seen the membrane of the cell-wall perforated by numerous pores(*a*). Hugo Mohl(*b*) acknowledges that, at the earliest period it is capable of being examined, the membrane, rendered blue by iodine and sulphuric acid, does present an appearance under the microscope like that of a sieve, in which numerous points, rendered brilliant by the free transmission of light, seem as if they were actually pores. But he states that tinging the membrane very faintly blue, and using a power of 500 diameters, he has always been able to detect a fine diaphanous membrane spread across the apparent perforations. However that may be, the existence of these transparent dots shews that, at this very incipient stage of organization, there is something more than a mere precipitation on a nucleus, such as Schleiden supposes, and such as Ascherson produced by putting oil-drops into an albuminous fluid.

Mohl thinks that he has detected a cell-wall preceding the one composed of cellulose, to which he has given the name primordial utricle, and of which he considers the membrane covering the pores in the cellulose to be the remains. He believes that the thickening of the cell-wall takes place by depositions on the interior of this utricle. Harting and Mulder(*c*) both think, on the contrary, that they have discovered the membrane described by Mohl, contained in the interior of the cell; that its formation always follows that of the cell-wall, to which it feebly adheres; that it terminates, in many instances, by disappearing altogether: and they give it the name of the internal utricle. In properties this membrane is peculiar: it is insoluble in water, alcohol, the diluted acids, and concentrated solutions of many salts; but most of these reagents render it more apparent by causing it to separate from the cell-wall. The interest of this controversy consists in the determination of the question whether the cell-wall grows in thickness internally or externally; and we shall see further on that the probabilities are greatly in favour of the latter mode of increase.

The transparent dots visible on the membrane of the young cell-wall are placed in a spiral direction, a circumstance more easily observable, if the cell be a little elongated. This is the appearance which has given rise to the opinion that the walls of the young cell are composed of one or many spiral fibres agglutinated together(*d*). The internal layer of old cells remains permanently composed of cellulose, capable of being turned blue by iodine and sulphuric acid(*e*), lined, in some instances, by the internal utricle, which serves as a membraneous sac for the cell contents(*f*). According as the cellular parietes thicken, new layers become deposited external to the cellulose. The thickened cell-walls may be divided into those which contain proteine, and those which do not.

(*a*) *Op. cit.*
(*b*) *Botanische Zeitung*, 15th, 22nd, and 29th of May, and 15th June, 1846.
(*c*) *Op. cit.* (*d*) Harting's *Mickrochemische.*
(*e*) Harting, Mulder, and Mohl. *op. cit.* (*f*) Mulder and Harting.

Cell-walls, not containing proteine, are found in the tissue called *collenchyma*, immediately under the epidermis, in a great number of exogenous stems. The fibrous cells of the Asclepiadeæ, and many parenchymatose cells, with thickened walls, belong also to this class. In these cases, Harting considers that the incrusting matter is formed of pectates, or of a substance (*pectose*), which is isomeric with pectic acid, and easily becomes transformed into it. These substances may even be found in the walls of cells, which, on account of their youth and tenuity, we would otherwise be inclined to consider not incrusted. The horny perisperm of many monocotyledons is formed of cells whose parietes, destitute of proteine, should cause them to be ranked in this class. However, their chemical composition differs from the preceding tissues. The incrusting matter in this case is as much isomeric with vegetable mucilage as with cellulose (C_{24} H_{19} O_{19}), but it differs from both in its chemical properties. Mulder finds that the cellulose of elder pith is very peculiar, requiring the fuming acid of Nordhausen to bring out the blue colour with iodine.

The parietes of truly lignified cells always contains proteine. The proteine is distributed through the whole thickness of the cell-wall, and can be detected by nitric acid and ammonia. According as the parietes become impregnated with proteine, this matter disappears from the cell-contents. It would seem, therefore, that in the process of lignification the cell-wall absorbs the proteine from the liquid cytoblastema. The disappearance of this matter from the sap led Mirbel and Payen into the error of supposing that, the older the tissues of vegetables, the less proteine they contain. Besides cellulose constituting the inner lining, and proteine diffused through its entire thickness, the wall of a woody cell contains two other principles, disposed in layers external to the cellulose. The outer layer can be separated from the middle by the action of the mineral acids. It is unchanged by concentrated sulphuric acid. Harting considers it to be identical with the cuticle of the epidermis, and calls it the *cuticle of the ligneous cells.* Mulder does not regard it as identical with cuticle. At an advanced period, it can be detected in the internal layer. Harting looks on the cuticle of the epidermis as merely an excessive deposition of this layer on the epidermic cells. It is possible that it may precipitate on the exterior of cells from the sap contained in the intercellular passages. Instances will come before our attention of constituents of cell-walls being derived from without, and not from the cell contents. Between the cuticular layer and the cellulose, there is an intermediate layer in woody cells. The matter which composes it swells very much under the action of acids and alcalies, and dissolves in concentrated sulphuric acid. Harting regards it as the same substance already alluded to, as incrusting non-ligneous cells,—a pectate or pectose. He considers that it is disseminated through the outer thickness of the original cellulose. Mulder does not attempt to identify it with any chemical principle; and he does not consider it as an impregnation, but as a distinct layer.

These researches, however, lead to certain positive facts, viz.: that the ligneous cell-wall consists of three layers, the outer unacted upon by sulphuric acid, the middle dissolved by it, and the inner turned blue by iodine and sulphuric acid; and that the whole thickness of the cellular parietes is impregnated by proteine.

Mohl thinks that there never are tubes communicating between adjoining cells. Harting considers that there frequently are. The pores in the membrane of contiguous cells, and which he believes to be pervious, are always placed directly opposite to each other, and, if nothing subsequently interferes, must necessarily form a communication between the cavities of the cells. It sometimes happens, however, according to him, that the external layer grows more rapidly than the other layers of the cell-wall, and will then form a diaphragm interrupting the continuity of the tube. On the other hand, it may also happen that the external layer may grow less rapidly than the other, and there will be then produced between the neighbouring cells a little cavity, opening by pores into the adjoining cells.

Much remains to be learned with respect to the destination and uses of the inorganic constituents of vegetable food. Some of them appear to be essential for the perfection of the cell-walls. Silica and carbonate of lime are sometimes deposited in such quantities in these membranes as to preserve the form of the tissues after their being subjected to combustion. In other instances crystals are found lying free in the interior of cells, or, as Payen has described, contained within a particular membraneous cyst. The cause of the deposition of these crystalline or amorphous deposits is obviously chemical; so is, likewise, their accumulation in particular situations. Thus the occurrence of an excess of phosphates in seeds is connected with the large quantity of proteine compounds in these organs, an albuminous solution being a solvent for the earthy phosphates(*a*).

I have said that vegetable cells rarely have nuclei or cytoblasts. This is, however, only true of fully developed cells. In very young cells cytoblasts can be readily enough detected. According to Harting, the substance which constitutes the nucleus appears to have much analogy with that of the internal utricle: neither cellulose nor proteine can be discovered in it. Nitric or sulphuric acids, diluted with one-fourth of their weight of water, do not dissolve it, even after prolonged action. Karl Muller(*b*) appears to have discovered what becomes of the cytoblasts in the mature cell. He thinks that he has ascertained that they become converted into starch granules. In watching the gradual development of the nucleus of chara, he believes that he has been enabled to seize the point at which the transformation takes place. He thus describes the process of starch formation. When only one cytoblast is contained in a cell, and all the cytoblastema has become exhausted, the cytoblast expands in all directions, until it has reached the circum-

(*a*) Mulder, *op. cit.* (*b*) *Botanische Zeitung*, Dec. 1845.

ference of the cell membrane that surrounds it. The outline which it then presents being very thick and dark, we may conclude that its membrane is very thick. It is not, however, perfectly homogeneous, but appears granular. It is manifestly hollow, which can be well observed by colouring it of a very pale blue with iodine. Generally, however, some spherical or reniform granules can be perceived on its interior. This is the simplest case: where several cytoblasts occur in the same cell, their proximity more or less modifies their forms, but the essential mode of their development is always the same. Karl Nägeli(*a*) has described the process of starch formation as it occurs in the young leaf of the Caulerpa prolifera. Passing from the youngest downwards to the first formed part of the leaf, he finds several zones of progressive development. The cell contents are at first nothing but a homogeneous mucilage; lower down this mucilage becomes granular; still further down utricles are, according to him, perceptible in the cell sap, containing a yellowish mucilage, homogeneous in the smaller utricles, granular in the larger; below this is the starch zone, containing amylum granules mixed with utricles, and utricles containing minute starch granules, together with granular matter. Sometimes two or three, or even four or six starch granules are in one utricle; lower down the number of starch granules increases, and that of utricles diminishes. These observations, although apparently opposed, are not really discordant. It would seem that the production of starch granules is dependent on an abortive effort at cell formation. Under pressure, and where the cytoblastema has been nearly exhausted, as in the nucleus of chara, the cytoblasts cover themselves with layer over layer of saccharine matter, and from the isomerism of sugar and gum with cellulose and starch, and of the two latter with each other, it is not extraordinary that the saccharine matter of the remaining cytoblastema should deposit itself as the matter of starch rather than as cellulose; we know that starch granules are composed of superimposed layers. In the young leaf of the Caulerpa prolifera the attempt at cell formation is more successful. Utricles are at first produced, but as the cytoblastema diminishes, and the cell-walls thicken, the minute granules, or nucleoli, are only capable of coating themselves with superimposed layers, and producing starch granules.

The development and composition of spiral vessels and ducts simulates that of ligneous cells. The parietes, as well as the fibres, are at first formed of cellulose. At the same time that the neighbouring cells are becoming woody, the vessels undergo an analogous change. The chemical composition of the vascular and cellular constituents of wood are therefore identical. The growth, in diameter, of spiral fibres, cannot be by deposition or absorption from cytoblastema constituting the contents of the vessels, for at this period spiral vessels only contain air. It must be, accordingly, by

(*a*) *Zeitschrift für Wissenschaftliche Botanik; Erster Band, Erster Heft.*

permeation from neighbouring cells. Vessels are always, at first, developed in the form of cells, each containing one or more spiral fibres. These cells, placed one above another, at length communicate, and form a tube closed at both extremities, and, at first, moniliform from the contractions that continue to point out its cellular origin. The tubes, in dicotyledous plants, have their least diameter nearest the pith. When the diameter is small, the spiral fibres of the chain of vesicles unite by their extremities. According as the tubes increase in diameter, the fibres break into pieces sufficient to constitute rings, or it may be merely dots. Such is the origin of spiral vessels, annular, and punctated ducts(*a*).

From what we have seen, it appears probable that the process of lignification does not take place in a descending but in an ascending direction. This is quite contrary to what vegetable physiologists have hitherto taught. Mirbel, it is well known, supposes that vegetable fibres are developed out of a liquid derived from the descending sap, which exudes between the bark and wood in autumn, and to which he gives the name of cambium. De Lahire advanced the doctrine that vegetable fibres might be considered as the roots of the buds, one set of which descended through the liber and another through the alburnum; and this view has of late years been most eloquently advocated by Dupetit Thouars. But, if late observations be confirmed, it will appear that the development of vegetable fibre is dependent solely on the constituents afforded to the cells by ascending sap, which constitutes their cytoblastema. These vegetable fibres consist of elongated ligneous cells in the liber of exogens, and of a mixture of these elongated ligneous cells and ducts in the woody parts. We have traced the gradual development of these tissues; we have seen how rapidly the process of lignification proceeds. It has been shewn that all cells, as well those that are destined to become ligneous, or to form ducts or spirals, as those that are intended to constitute collenchyma or parenchyma, are originally constituted of the same elements; and that the matters which subsequently incrust them belong to the primæval cell-generating fluid: that the soluble substances, identical or isomeric with sugar, and the proteine compounds are formed as a necessary preliminary to all organization. We are, therefore, forced to acknowledge that the descending or elaborated sap has nothing directly to do with the formation of these vegetable fibres. It likewise follows that the production of vegetable fibres is not a subsequent growth to that of the formation of parenchymatous cells. The increase in size of the stem is not, therefore, due, as has been heretofore thought, to a new and interstitial growth of vegetable fibres, either penetrating downwards from the buds, as Dupetit Thouars supposes, or organized out of the cambium, according to the opinion of Mirbel. These vegetable fibres are not the produce of a new growth, but of a more advanced development.

(*a*) Mulder and Harting, *op. cit.*

These novel and unexpected views of vegetable development are strongly corroborated by some observations of Professor Unger's, on the formation of annual concentric layers in exogenous woody stems(*a*). He had observed that the summer of 1846 was remarkable on account of its heat, accompanied in parts of Germany by considerable humidity. The consequences of these conditions were that vegetation was exceedingly luxurious, and that, as in tropical climates, not only did many plants flower a second time, and the vines produce a second crop of fruit, but, in several instances, the buds of the following year became developed to a considerable extent into branches bearing leaves. Under these circumstances, M. Unger became desirous of ascertaining if, in these cases, two distinct woody rings had become formed, as two sets of buds had been developed in the course of the year. As the result of an examination of a considerable number of young shoots, he found that such was not the case; and he is therefore led to conclude that the mere development of two sets of buds in the year will not give rise to two distinct zones; but that there must also be, to produce this effect, an intermediate check to vegetation; and that, consequently, if we could suppose *a climate unchanging throughout the year, no concentric zones whatever would be produced.* He applies this law to fossil botany, and inasmuch as there are scarcely any perceptible zones in the fossil wood of the transition and coal formations, that those of the coniferæ in the Lyas are perceptible, and that those zones become manifestly distinct in the oolite, he concludes that the establishment of seasons has only gradually taken place in the earth's history. However that may be, the correspondence of a single woody zone with the development of two generations of buds, is hardly reconcileable with either of the theories of MM. Mirbel or Dupetit Thouars.

Observations that at first appear very much in favour of the hypothesis of the latter botanist have been lately made by M. Trecul. This observer finds that the rhizoma of the *nuphar lutea* has the structure of an endogeneous stem, although the embryo is truly dicotyledonous(*b*). When cut transversely, neither concentric layers, nor medullary canal, nor medullary rays, can be observed, but, on the contrary, a cellular network interposed between fibro-vascular bundles, forming, at a certain distance from the circumference, a zone concentrical to it. Some others are distributed in the centre; finally, external to the zone there are found others more delicate than the preceding; these are derived from the leaves, longitudinal sections of which lead to the same conclusion. If we remove with precaution the circumferential cellular tissue, taking care to leave the bases of the roots and the cicatricula of the leaves, we arrive at the fibro-vascular zone already alluded to; and M. Trecul has satisfied himself that it is constituted of fibres disposed in a ring, from which emanate the radicular fascicles as well as all the other fibres of the stem. It

(*a*) *Botanische Zeitung*, 1847.
(*b*) *Journal de Pharmacie et de Chimie*, April, 1845.

may be perceived, likewise, that the fibres of the external face of each petiole all grow upon the same side of the stem as that to which the leaf belongs. Of these fibres the nearest to the back of the petiole have their insertion below the roots situated at the base of the petiole; the more lateral have their origin below the roots corresponding to the neighbouring leaves. The other bundles of the same petiole come from parts more profound. In following them into the interior of the stem we can see that they traverse it, and arrive at that part of the peripheral ring that is on the opposite side. Each of the leaves repeats these phenomena, all the fibres crossing one another, and, emitting connecting ramifications, give to the stem this structure, seemingly so complicated. Here, M. Trecul thinks, are very evidently shewn the analogues of the *faisceaux précurseurs* that M. Mirbel has remarked in the stipe of the date palm. The adventitious roots of the *nuphar lutea* present the structure of those of monocotyledonous plants. They grow at the base of each of the leaves, but are not all developed, those of the superior surface of the stem remaining stationary, concealed in the cellular tissue of the latter. These consist of merely the central bundle of fibres; the others are furnished with circumferential tissue and rudimentary spongioles. Wherever these roots become developed, their centre is occupied by a cylinder of elongated cellules, emanating from the reticulated fibres of the circumference of the rhizoma, chiefly under the form of a little mamillary projection which becomes elongated obliquely from above downwards, and round which simultaneously grow the circumferential tissue of the root and spongioles. Surrounding the central cylinder are disposed the fibrous bundles in twelve or fifteen radiating fascicles. These vessels are prolonged from the stem in the same manner as those which are continued into the petiole and peduncle. When the young root becomes liberated, by tearing the tissues which cover its extremity, it bears on its summit, while elongating itself, a little *caul*, which is no other than the spongiole. This decays at its most aged or external part, in measure as it becomes renewed at its central part adjacent to the summit of the central cylinder. Beneath this spongiole the epidermis of the root becomes organized, as well as the hairs which it carries. These latter are discernable in consequence of the incessant destruction of the base of the spongiole. The roots frequently give birth to radicles, which themselves emit secondary radicles. The development and structure of these little roots of the second order scarcely differ from those of the same organs in other plants, except that their vessels in lieu of being disposed circularly round the central cylinder, form a little bundle which occupies the axis of the radicle. These same vessels are not prolonged from those of the root, but are applied by their bases, which are swollen, to the vascular fascicles on the external side of this organ.

In a subsequent memoir(*a*), M. Trecul enters more generally into

(*a*) *Annales des Sciences Naturelles*, Nov. and Dec. 1846.

the origin of roots. He is led from his dissections to conclude that there always exist, normally, in certain plants, at fixed places, what may be called buds of the roots, or latent rudimentary roots. The evolution of the root always commences, by a small cellular mass becoming developed, either at the extremity of one or many bundles of fibres converging to a point, or at the side of a single bundle, or at the contact of two neighbouring bundles, or even at the surface of a continuous woody layer, without medullary rays, or again opposite one or many of these rays when they exist. M. Trecul finds that the opinion very generally entertained, that adventitious roots arise from the place where the medullary rays pierce the bark, is erroneous. He describes the latent root as consisting of three parts: the one central, whose nature and elementary composition varies; the second cortical; the third enveloping the extremity of the root, or even the entire root, to which latter he gives the name of pileorhizon. The central system of the root is always composed, at least at the base, of similar elements to those existing in the part of the stem from which it arises; thus, it is sometimes vascular as in *aspidium filix mas;* sometimes medullary, as in *valerian;* sometimes woody, as in the cereal grasses; and sometimes of the nature of the medullary rays. He has always seen the vessels of the root originate in contact with the fibro-vascular system of the stem, and become prolonged from thence into the rudimentary radicle. He has never seen the vessels formed in the first instance in the root, and subsequently grow inwards to join the vascular system of the stem.

The force of the argument derived from the foregoing observations, in favour of Dupetit Thouar's theory, depends on the continuity of the fibres of the petiole to the origin of the roots in the complicated fibro-vascular structure of *nuphar lutea*, and the supposed constancy with which the fibres of the roots originate in contact with the fibres of the stem. But there are other observations that show that the latter fact cannot be universal. Mohl and Unger have seen the vessels first formed in the young root, and in a more mature state joined side to side with the vascular system of the stem. Mirbel's observations on palms are of a similar nature; he speaks of the central vessels of the aerial roots as becoming more slender as they leave their point of origin in the root, and finally becoming lost among the central fibres of the stem; whilst the peripheral fibres, he says, divide into two portions after they have penetrated the stem, some of which ascend, and others descend parallel with the other fibres of the stipe. But, even allowing the universality of the fact stated by M. Trecul, it is a virtual abandonment of M. Dupetit Thouar's theory, which requires that the root fibres should be continuous with the fibres of the stem, and not merely originating in contact with them.

M. Mirbel thinks that the law discovered by himself and Payen, that nitrogenous compounds most abound in the sap of growing parts is fatal to M. Dupetit Thouar's theory(*a*). He says that this

(*a*) *Compte rendus*, March, 1846.

law is at variance with the supposition of the descent of vegetable fibres, inasmuch as in that case the youngest part of the fibre, and that at which nutrition may be supposed most active, would be constantly passing down into parts less nitrogenous.

This is true; but the argument equally affects his own theory; for the interstitial formation of fibres, from the cambium between the bark and wood, would be just as much in opposition to this law. But this law is perfectly in accordance with the supposition of lignification consisting in an advanced organization of tissues already existing, at the expense of the nitrogenous cytoblastema out of which they were originally formed,—the only supposition, indeed, reconcilable with the discoveries of Harting and Mulder. The difficulty that remains to be explained has not yet been touched on. Why should these transformations affect continuous rows of cells, so as to give rise to fibres and vessels? We may remark, in passing, that De Candolle's hypothesis, that *lenticelles* are buds of the roots, is totally untenable.

We have seen that Nägeli looks on the terminal cells in the leaf of the *Caulerpa prolifera*, as the youngest or last formed. A very different opinion is formed by Dr. de Mercklin, who has lately published a treatise on the development of leaves(*a*). He describes the leaf as commencing in a little nipple-shaped prominence on the axis of the bud; and he maintains that the apex of this mammilla is always either the summit of the leaf or the extremity of the common petiole. The part of the leaf towards the summit is always, according to him, that which is first developed. All leaves in their commencement resemble simple leaves. The stipules, and the inferior part of the petiole, are invariably, he says, the last formed portions. Compound leaves always commence like simple leaves, and, in subsequently becoming pinnate or digitate, always pass through the intermediate forms of pinnatifid or palmate. The petiole (whether of a simple leaf or a compound leaf) must, both as regards its position relatively to the axis, as well as its structure, be considered an immediate prolongation of the axis; it certainly exercises a great influence on the formation of the leaf. All the parts of a leaf are originally symmetrical. In compound leaves, the folioles are always at first opposite. The lamina is the first part of the leaf which becomes developed. Notwithstanding the decided manner in which these opinions are advanced by Dr. de Mercklin, we are inclined to agree with M. Trecul(*b*), that just as the summit of the stem and the extremity of the root are always the youngest parts of each of these organs, so it is with the leaf, the margins of the limb being the least aged; that the petiole and the median line are the first to grow, the sheath and the limb afterwards forming on the sides of the former.

The changes which take place in the sap, under the influence of light, are easiest studied in the formation of *chlorophylle*, which so

(*a*) *Entwicklungeschicte der Blattgestalten*, Jena, 1846.
(*b*) *Journal de Pharmacie et de Chimie*, June, 1845.

rapidly becomes produced in the majority of plants under exposure to this agent, and is the cause of the green colour of leaves and young stems. Karl Nägeli has made researches on the production of this substance(*a*). He finds that, in the young leaf of the *Caulerpa prolifera*, the chlorophylle zone is lower down than the starch zone; it commences by the appearance of utricles full of greenish matter; further down are utricles containing granules; and finally, in cells still older, are fine chlorophylle granules. From the chlorophylle being at first contained in vesicles, it is evident that in this case, as well as in the production of starch, there is at first a tolerably successful attempt towards cell formation; but the granular matter contained in the vesicles has a different source. Chlorophylle contains nitrogen, and, therefore, is most probably derived from an incipient decomposition of the proteine constituents of the cytoblastema: starch, on the contrary, is only an isomeric modification of the saccharine constituents of the cytoblastema. The process of decomposition having once commenced, it may be supposed that, as in ordinary vinous or acetous fermentation, the process of molecular change soon spreads, under the influence of the decomposing proteine, to the other materials of the sap; the products of this fermentation will, of course, be modified by the circumstances under which it takes place; but from its occurrence may be dated the formation of the various proper juices, whether oils, resins, alkalies, acids, colouring matters, &c., which, more or less peculiar to each vegetable, descend through the bark of exogens, and either exude or deposit themselves in particular receptacles of secretion. It follows from Nägeli's researches, that the oxygen which is evolved in such quantity from the green parts of plants, under the influence of light, can only be due to the commencement of this fermentation; and that the way that light acts is as a catalytic agent, just as the presence of the sulphuric acid, aided by a certain temperature, causes starch suspended in water to become converted into grape sugar.

From what we have seen of the formation of saccharine and proteine compounds, it is plain that the evolution of oxygen is a condition essential to the commencement of vegetation; but the escape of oxygen, under the influence of light, is quite a distinct phenomenon.

The function of *fecundation in plants* remains surrounded with difficulties. The hypothesis of Schleiden, that the *boyau*, descending from the pollen grain through the micropile, bursts, and emits granules in the embryo-sac, which become the nucleoli of cells, appears, notwithstanding its plausibility, to be abandoned as inconsistent with observation. Mr. Browne, in his researches on the impregnation of the orchideæ and asclepiadeæ(*b*), observed tubes in the placentæ, which he ascertained did *not* communicate with the pollen grains, and

(*a*) *Zeitschrift für Wissenchaftliche Botanik; Erster Band.*
(*b*) Transactions of the Linnæan Society.

to which he gave the name of mucous tubes. Signor Amici(*a*) says that it is impossible to be mistaken as to the fact that the *boyau* does *not* open into the embryo-vesicle; on the contrary, that the granular contents of the *boyau* are greenish, while those of the embryo-vesicle are white, and that the latter, at the time of the introduction of the *boyau* through the aperture of the primine, have subsided to the bottom of the vesicle, leaving the upper part transparent. He asserts that the extremity of the pollen tube is merely applied to the external surface of the vesicle. Here are two observers of the highest eminence, the one stating that he has been able to demonstrate that some of the placental tubes (mucous tubes) do not communicate with the pollen grains; and the other proving that the other extremity of the tubes does not ever directly communicate with the embryo-sac. Signor Gasparini(*b*) states that he has seen the pollen of a species of citrus, which, when placed on the stigma, neither protruded a filament nor a pollenic *boyau*, but merely presented a slight prominence on its surface, which shortly burst, and permitted the fovilla to escape, and become mixed with the viscid humour on the stigma; that in the style he could not, with the greatest research, detect a trace of anything like a pollenic tube; and yet opposite the micropile he discovered filaments protruding from the placenta. And the same observer has perceived similar filaments protruding through the opening in the external membrane of the ovule of *Cytinus hypocistis*, under circumstances where sexual contact could scarcely have occurred. At the Scientific Congress at Naples in September, 1846, the Professor was enabled to exhibit a preparation of this kind to Mr. Browne, M. Link, and other eminent botanists. Dr. Dickie(*c*) has detected in the ovule of the *Narthecium ossifragum*, a tube permeating through the foramen, and passing upwards, along the placenta, but terminating in a blind extremity. Mr. Griffith (a botanist lost too soon for science) has represented a similar appearance in the anomalous ovule of *Santalum*(*d*). All these observations tend to shew that physiologists still remain very much in the dark with respect to the process of impregnation; and, at the same time, it is one, of all others, especially deserving of attentive examination.

It is very interesting to observe the analogy which exists between the process of growth in organs very different from each other, or even between plants the most simple and those the most complicated. At the verge of the vegetable kingdom we find plants like the protococcus, the palmella, and the nostoc, consisting of a gelatinous matter containing minute cells, which, whether they be nucleated or not, are manifestly formed by the coagulation of the mucilage into a hollow, cyst-like membrane. In the confervæ we find the cells, by the union of which the filaments are formed, con-

(*a*) *Giornale Botanico Italiano*, di Filippo Parlatore, ann. 2.
(*b*) *Musæo*, vol. viii. p. 45.
(*c*) Annals of Natural History, vol. xvii. p. 9.
(*d*) Linnæan Transactions, vol. xviii.

taining a turbid-coloured mucilaginous fluid, which is capable of separating in time from the more limpid fluid with which it is mixed, and forming masses of various shapes in different species. A beautiful example of this has been long known in the genus *Zygnema*, in which parallel filaments, lying near each other, have been observed to throw out opposite pullulations, which at length uniting, and their extremities becoming ruptured, they communicate to form a tube, when the mucilaginous and coloured liquid (endochroma) of the cells thus communicating collects, either entirely into one cell, or else into the communicating tube, presenting masses variously shaped according to the species. A somewhat similar phenomenon has been lately discovered by Mr. Thwaites in some species of diatomaceæ(*a*).

The mucilaginous mass of endochrome in time becomes hollow, and and thus forms a spore. This is precisely analogous to what we have alluded to as occurring in palmella. Mohl considers that a fluid of a mucilaginous consistence, containing nitrogen as a constituent, and becoming brown under the influence of iodine, is the material out of which cell-formation always takes place(*b*) : to this he gives the name of protoplasma. It is, in fact, identical with the cytoblastema of Schleiden. Now it is remarkable that the mucilaginous and turbid contents of the pollen present these characters, and Sullivan has found that it likewise contains nitrogen. Germination may proceed from a single cell, or from a combination of cells. If from a single cell, this may, in the character of a parent cell, develope others in its cavity; this occurs in many simple plants, such as *Globulina:* or the cell may become prolonged, and develop other cells on its exterior ; this is what takes place in all the fucales, lichens, fungi, mosses, ferns, characeæ, &c. One of the most remarkable examples of this kind of development is that which occurs in chara. Karl Müller(*c*) describes the nucleus of this tribe as consisting of a central nucleus, five long, spiral, tubular spores surrounding it, and an external membrane surrounding the spores. In germination, four of the spores turn downwards to form roots, and one directs itself upwards to form the stem. The latter, after ascending for some distance, produces six cells upon its summit, one in the centre, and five in a whorl surrounding it ; and these, as they become developed, at first surround the central one in a spiral, but by-and-by separate from it, and spread themselves centrifugally to form branches, while the central one elongates itself to continue the axis. This process again and again becomes repeated, until at length, by an arrest of this mode of development, nuclei become regenerated.

In the lycopodiaceæ, according to Karl Müller, there is another variety of germination(*d*). In this family it has been long known

(*a*) Annals of Natural History, July, 1847.
(*b*) *Botanische Zeitung*, vol. iv. p. 75. (*c*) Ib. June, 1845.
(*d*) *Botanische Zeitung*, July and August, 1846.

that there are two dissimilar kinds of granules capable of being detected. One kind is well ascertained to be capable of germinating; the nature of the other variety is still obscure. The kind which germinates consists of cells which contain a fluid answering to the characters of the protoplasma of Mohl. In the act of germinating, cells may be observed to form in the midst of this mucilage, and uniting with each other, and continuing to increase in number, they at length burst through the common investing membrane, and become a new plant. The reproductive organ, in this instance, acquires many of the characters of an ovule, although without a foramen or any evidence of being subject to impregnation.

Next in complexity is the ovule furnished with a foramen, and undergoing impregnation. Under such circumstances the embryo may be developed, as is most usually the case, within the ovule; or, as Schleiden has shewn with regard to the rhizocarpeæ, external to it. Something similar to the latter mode of development has been observed by Mr. Griffith in santalum, osyrus, and avicennia.

RETROSPECT

OF THE PROGRESS OF CHEMISTRY FOR THE YEARS 1846 AND 1847.

By WILLIAM SULLIVAN, Esq.,

FIRST CHEMICAL ASSISTANT IN THE MUSEUM OF IRISH INDUSTRY.

It was originally intended to give an annual Report of the Progress of Chemistry, but, owing to the press of more practical matter, none appeared for the year 1846. I have, therefore, thought it necessary, in order to make the Reports complete from the commencement of the present Series of this Journal, to include the more important Researches of 1846 in the retrospect for the past year.

The limited space which can be afforded to a report in a journal of this kind will forbid my noticing any but the more important memoirs. I have devoted more space to the purely theoretical and physical part of chemistry than is usually done; and although many may be at a loss to know what connexion such subjects have with medicine, I believe them to be the only basis on which a true chemical science can be founded. The chemist who diminishes the number of substances does more for science than he who increases them; and he who connects a number of facts by some general law opens up new fields for research. The number of such laws is now very rapidly increasing, and some hopes may be indulged in that chemistry will ere long beome a mathematical science.

The theory and nomenclature of Laurent and Gerhardt, with some unimportant alterations, having been adopted by Leopold Gmelin, in his *Handbuch der Chemie*, and no complete account of the views of these chemists having, as far as I am aware of, appeared in English, I have thought it necessary to give a short account of

them in the present Report, although it is now three or four years since the original memoirs appeared in France. The adoption of these views by such a man as Gmelin, and the introduction of the nomenclature founded on them into the fourth volume of his celebrated work on chemistry, has given them an importance which will, I hope, secure them that attention which they deserve.

Dumas, in 1840(*a*), considered that chemical compounds may be regarded as planetary systems, in which the atoms maintain their relative positions by the force of their mutual affinities; and that if an atom of one of the substances composing such a system be replaced by an atom of another substance, the system remains unaltered. He also considers that a compound atom can be substituted for a simple one without changing the constitution of the group. All bodies are capable of this substitution,—if we except, probably, carbon,—but hydrogen is the one most readily so.

If the substitution takes place atom for atom, and that the relative position of the atoms in the compound remains the same, the new combinations produced belong to the same *type*. Dumas assumes two kinds of types,—the chemical, and the mechanical or molecular.

Compounds which contain the same number of atoms (equivalents of Dumas), combined in the same manner, and possessing the same fundamental properties, belong to the same *chemical type*. Thus acetic acid, $C_4 H_4 O_4$, and chloro-acetic acid, $C_4 HCl_3 O_4$, belong to the same chemical type; so also do aldehyde, $C_4 H_4 O_2$, and chloral, $C_4 HCl_3 O_2$, and chloraldehyde, $C_4 Cl_4 O_2$; chloroform, $C_2 HCl_3$, bromoform, $C_2 HBr_3$, iodoform, $C_4 HI_3$, and marsh gas, $C_2 H_4$, are also belonging to the same type.

Combinations belonging to the same chemical type always yield analogous or identical products of decomposition. Thus acetic acid, $C_4 H_4 O$, is decomposed, by being heated with excess of potash, into $2CO_2$, and marsh gas, $C_2 H_4$; and chloro-acetic acid also yields, by boiling with solution of caustic potash, $2CO_2$, and chloroform, $C_2 HCl_3$, which belongs to the same chemical type as marsh gas.

Two combinations, one of which may have been formed from the other by substitution, containing the same number of atoms, combined in the same manner, but having different chemical properties (one being acid, and the other being neutral or basic), he does not consider to belong to the same chemical type, but they may still form a sort of natural family, that is, may have the same *mechanical* or *molecular type*. Thus pyroxilic spirit, $C_2 H_4 O_2$, and formic acid, $C_2 H_2 O_4$, have the same mechanical type, as have also alcohol, $C_4 H_6 O_2$, and acetic acid, $C_4 H_4 O_4$.

Laurent fully adopted these views, and in a series of beautiful papers on the products of naphthaline, &c., extended and confirmed them, and finally developed them in a much more perfect manner than Dumas had done, in his nucleus theory.

(*a*) *Annal de Chim. Phys.* 73, 73.

According to this theory, the atoms of organic compounds are partly nuclei (*noyaux*) and partly combinations of these nuclei with other substances deposited externally on them. The nuclei are collections of carbon atoms with the atoms of some other elements, forming mathematical figures; the figure so produced, as well as the number of the atoms forming it, being different for each substance.

In his first paper on this subject he thus expressed this view: If we imagine a regular sixteen-sided prism, having at each angle an atom of carbon, we shall have altogether thirty-two atoms of carbon, and if we further imagine an atom of hydrogen to be placed in the middle between each angle, making altogether thirty-two atoms of hydrogen; and finally, if we suppose one atom of water to be placed on each base of the prism, representing the two pyramids in a crystal of the same form, we shall have the combination, $C_{32} H_{32}$, 2HO. Now in the same manner as we can mechanically split a crystal, and separate the primitive nucleus from the secondary covering or envelope, can we also chemically, for if we take away the two pyramids of HO, which form the bases of the prism, there will remain the primitive form or nucleus. If we act on this nucleus with chlorine or oxygen, we remove hydrogen; and the prism will then be destroyed, unless we replace the atoms of hydrogen by an equivalent number of oxygen or chlorine atoms. Now the HO or HCl formed by this action may either escape or form pyramids on the prism, and thus give rise to secondary compounds, still containing the primitive nucleus, which we can again separate by chemical splitting, as, for example, by potash, which removes the secondary prisms of HCl or HO, and leaves the primitive nucleus.

The number of atoms constituting such a primitive nucleus is always even, as is also the number of the atoms of its constituents. There is always a simple proportion between the number of atoms of carbon and the number of atoms of the other constituents, and generally as follows: 2:2; 4:4; 8:8; 32:32; 6:4; 12:6; 12:8; 14:6; 18:8, &c.; and but very seldom a more complex relation.

When the nucleus consists of only carbon and hydrogen, it is denominated a *primitive* or *fundamental nucleus* (*noyau fondemental*); when one or more or all the hydrogen atoms have been removed and substituted by an equal number of atoms of some other body, which occupy the same place in the nucleus as the hydrogen atoms did, it is called a *derivative nucleus* (*noyau derivé*).

The elements which most generally substitute the hydrogen are iodine, bromine, chlorine, oxygen, nitrogen, and the metals; and the compound atoms are NO_4, for shortness' sake generally expressed by an X; $NH_2 = Ad$, or amidogene; $NH_3 = Am$, or ammonia; $AsH_2 = Ar$, or arside; $C_2N = Cy$, or cyanogen.

All nuclei are neuter, even when they contain O, Br, Cl, NO_4, &c.; and the properties of a body are much less changed by the substi-

tution of Cl, Br, or I, for the hydrogen of its nucleus, than by O, NO_4, or NH_2.

Examples of Nuclei.—In the Ethene series, olefiant gas, $C_4 H_4$ = ethene, is the fundamental nucleus: chlor-ethase = $C_4 H_3 Cl$; brom-ethase = $C_4 H_3 Br$; ar-ethase = $C_4 H_3 Ar$; chlor-ethesè = $C_4 H_2 Cl_2$; chlor-ethisè = $C_4 HCl_3$; chlor-ethose = $C_4 Cl_4$.

The termination in *se* determines the substance to be a derivative nucleus; the vowel before *se* shews the number of hydrogen atoms which have been replaced by the other body. If one atom has been substituted the word terminates in *ase*; if two, in *ese;* three, in *ise;* four, in *ose;* five, in *use;* six, in *alase;* seven, in *alese;* eight, in *alise.*

If the element which substitutes the hydrogen is not named, O is to be understood ; if another element substitutes it its name is prefixed: thus chlor-ethase is ethene in which one atom of hydrogen is replaced by one of chlorine, and in chlor-ethose all the hydrogen is substituted by chlorine.

In the Naphthene series, naphthaline = naphthene, $C_{20} H_8$, is the fundamental nucleus, from which are formed thirty-three derivative nuclei, of which I shall just mention a few: Naphthase, $C_{20} H_7 O$; ninaphthase, $C_{20} H_7 X$; amanaphthase, $C_{20} H_7 Ad$; chloranaphthése, $C_{20} H_6 OCl$; chloréninaphthose, $C_{20} H_4 XCl_3$; chloribronaphthuse, $C_{20} H_3 Br_2 Cl_3$; chlonaphthalase, $C_{20} H_2 Cl_6$; chloroxénaphthalese, $C_{20} HCl_5 O_2$; &c.

All these derivatives have the same type, which we may call the *nucleus type*, and are therefore supposed to have the same mathematical figure.

But as very frequently atoms of different elements, and also compound atoms, deposit themselves on the nucleus, a number of new types belonging to the same series thus arise, differing according to the number and nature of the atoms so deposited. The substances thus deposited on the nucleus may be called the *envelope*, and this, with but few exceptions, consists of an even number of atoms, generally 2, 4, or 6, and very seldom more.

Very rarely more than two atoms of hydrogen deposit themselves on the nucleus; thus, marsh gas, $C_2 H_4$, may be considered as $C_2 H_2$ (palene) + H_2.

From two to six atoms of chlorine, bromine, iodine, or sulphur, can deposit themselves on the nucleus. They can be again removed by potash, without replacing them by any other substance. Sometimes the whole of the chlorine, &c., united with the nucleus, combines with the potash, and leaves the nucleus unchanged; or else one-half of the atoms of the envelope, with an equal number of the hydrogen atoms of the nucleus, combine with the potash, while the other half of the chlorine or bromine atoms of the envelope enter into the composition of the nucleus in place of the hydrogen removed. But the bromine or chlorine existing in the nucleus is removed with great difficulty by potash, and when removed, the

nucleus is either entirely broken up or changed into another, unless the chlorine, &c., removed is substituted by some other substances.

As examples of such combinations the following from the ethene series may be given: oil of olefiant gas, chlorure d'ethène, $= C_4 H_4, Cl_2$; chlorure de chlorèthase, $C_4 H_3 Cl, Cl_2$; sesqui-chloride of carbon = chlorure de chloréthose, $C_4 Cl_4, Cl_2$.

A fundamental or derivative nucleus can combine with two, four, or six atoms of oxygen. When it combines with two atoms it is generally converted into a *neutral oxide*, and sometimes, but very seldom, into a *weak acid*. The combination with a fundamental nucleus is denominated a *protogénide fundamental*, and that with a derivative a *protogénide dérivé*.

Thus, aldehyde, $C_4 H_4, O_2$; oil of bitter almonds, $C_{14} H_6, O_2$; and oxide de chloroxénaphthalise, $C_{20} Cl_6 O_2 + O_2$, are examples of neutral oxides; while phaenic acid, $C_{12} H_6, O_2$; chlorphaenusic acid, $C_{12} HCl_5 + O_2$; and picric or nitrophaenisic acid, $C_{12} H_3 X_3 + O_2$, are examples of weak acids.

When a nucleus combines with four atoms of oxygen, a *monobasic acid*, *sel monabasique*, is formed(*a*). In this case one atom of hydrogen of the nucleus must acquire the property of being substituted by one atom of metal.

Examples of Monobasic Acids.—Formic acid, $C_2 H_2 + O_4$, and its metallic salt, $C_2 HM + O_4$; acetic acid, $C_4 H_4 + O_4$, and its metallic salt, $C_4 H_3 M + O_4$, &c.

When six atoms of oxygen deposit themselves on a nucleus, a *bibasic acid*, *sel bibasique*, is formed. In this case two atoms of hydrogen must acquire the property of being replaced by two atoms of metal.

Examples.—Oxalic acid, $C_4 H_2 O_2 + O_6$,—metallic salt, $C_4 M_2 O_2 + O_6$, its nucleus being ethene, $C_4 H_4$; phtalic acid, $C_{16} H_6 O_2 + O_6$,—metallic salt, $C_{16} H_4 M_2 O_2 + O_6$, and its nucleus, phtalene, $C_{16} H_8$.

Laurent looks on tribasic and polybasic acids as mere combinations of two or more simple acids.

Two atoms of hydrogen and two atoms of oxygen can unite with the nucleus, but not exactly as two atoms of water, but in some other way. *Alcohols*, in a general sense, are thus formed.

When oxygen or chlorine increases to too great a degree, either in the nucleus or envelope, the compound readily decomposes into two nuclei, which only contain, each, one-half of the number of carbon atoms of the original nucleus, and therefore belong to a lower series of organic bodies.

Thus by the action of a solution of potash chloral (of the ethene series), $C_4 HCl_3 + O_2$ is decomposed, under the influence of 2HO, into formic acid, $C_2 H_2 + O_4$, and chloroform, $C_2 HCl + Cl_2$, both

(*a*) As the acid differs from its metallic salt by containing one atom of hydrogen instead of one of a metal, Laurent considers the acid itself as a salt.

which belong to the series of the fundamental nucleus, palene, $C_2 H_2$.

Most of the fundamental and derivative nuclei belonging to the most usual organic types are known (that is isolated), but there are still many fundamental nuclei, whose existence is hypothetically deduced from derivative nuclei; and some fundamental and derivative are assumed from the existence of a series of compounds, which can be best understood by considering them as combinations of an unknown nucleus with other substances. Thus, for instance, the existence of palene, $C_2 H_2$, is not yet firmly established, but it is assumed to exist, because many compounds, such as marsh gas, $C_2 H_2 + H_2$; formic acid, $C_2 H_2 + O_4$; methylic ether, $C_2 H_2 + HO$, &c., are thus best classified.

The similar types of the same series have a certain physical and chemical resemblance (including also isomorphism), even when the nucleus of one contains only carbon and hydrogen, while that of the other may contain more or less chlorine, &c. Thus the four combinations of the phaene series, $C_{12} H_6 + O_2$, $C_{12} H_4 Cl_2 + O_2$, $C_{12} H_3 Cl_3 + O_2$, and $C_{12} HCl_5 + O_2$, all readily melt and volatilize without change; are scarcely soluble in water, but are very soluble in alcohol and ether. But combinations of the same series which belong to different types, even when the number of atoms in both differ very little, exhibit very important differences; thus, for example, indigo blue, $C_{16} H_5 NO_2$, and indigo white, $C_{16} H_5 NO_2 + H$.

Gerhardt's Nomenclature(*a*).—Laurent has founded a classification on this theory which has not been much employed except with the compounds discovered by himself. It forms the basis upon which Gerhardt has constructed the classification which he has so fully developed in his *Précis de Chimie organique.*

Gerhardt considers organic substances as a *vast scale,*—the two extremities of which are occupied, the one at the summit by the cerebral substance, albumen, fibrine, and other bodies still more complex; the other at the bottom, by carbonic acid, water, ammonia, &c.

When we oxidize by any means part of the hydrogen and carbon of a body, we *descend* this scale, that is, we produce a body of a simpler constitution; but when we subject a body to the process of reduction we *ascend the scale*, that is, we produce a body of a more complex composition. These considerations, Gerhardt says, lead to an exact idea of the principles upon which we should classify organic substances, without the aid of hypothesis, or without exceeding the limits of experience.

He considers that the equivalent or atomic weights of the elements have not hitherto been rightly determined, because the relation of their volumes in the gaseous state has not been sufficiently attended to.

(*a*) *Precis de Chimie Organique*, tom. i. and ii., Paris, 1844 and 1845; and an excellent abstract by T. S. Hunt, in Silliman's American Journal, Nos. 10 and 11, August and September, 1847.

Considering, with Berzelius, that equal volumes of the simpler gases contain an equal number of atoms, he makes the formula for water H_2O. On the same ground he considers with Berzelius that the atomic weights of iodine, bromine, chlorine, fluorine, and nitrogen, are only half what are given in English works on chemistry. But he goes much further than Berzelius by taking the atomic weights of most of the metals at half what they are at present considered to be. On this view oxide of mercury is not HgO, but Hg_2O (the suboxide being Hg_4O); oxide of copper is not CuO, but Cu_2O (the dinoxide being Cu_4O); oxide of iron is not FeO, but Fe_2O; and so on.

Gerhardt's equivalents can be converted into the ordinary ones either (1) by leaving the equivalents of O, C, S, Se, as they are usually taken, and halving those of H, I, Br, Cl, F, N, and the metals; or (2) we can leave the latter as they are usually taken, and double those of O, C, S, Se, thus:

	O.	C.	S.	Se.	H.	P.	I.	Br.	Cl.	N.	K.	As.
According to (1), . .	8	6	16	40	0·5	15·7	63	39·2	17·7	7	19·6	37·5
According to (2), . . .	16	12	32	80	1	31·4	126	78·4	35·4	14	39·2	75
Ordinary equivalents, .	8	6	16	40	1	31·4	126	78·4	35·4	14	39·2	75

His formulæ can be converted into the ordinary ones by leaving the number expressing the atoms of hydrogen and the other bodies in the series given above unchanged, and doubling the numbers expressing the atoms of O, C, S, and Se. Thus, Gerhardt's CN is C_2N; $C_2H_4O_2$ is $C_4H_4O_4$; C_8H_3NO is $C_{16}H_3NO_2$, &c. 1 equivalent of water, according to Gerhardt, is $H_2O = 2HO$, and therefore not 9 but 18: in the same manner 1 equivalent of carbonic acid, $CO_2 = 2CO_2$, is not 22 but 44; and 1 equivalent of sulphuric acid, $SH_2O_4 = 2(HO, SO_3)$, is not 49 but 98, &c.

If we examine organic compounds, we will find that those which correspond in their chemical relations generally observe the same proportions between their constituent elements. Thus, in the alcohols, wood spirit, CH^4O(*a*); spirit of wine, C_2H_6O; oil of potato-spirit, $C_5H_{12}O$; and ethal, $C_{16}H_{34}O$: if the single equivalent of oxygen which each contains were combined with two equivalents of hydrogen to form water, the residue of carbon and hydrogen in each would be in the proportion of 1 : 2. By oxidizing agents the alcohols lose two equivalents of hydrogen, and gain one of oxygen, giving rise to formic, acetic, valerianic, and ethalic acids, respectively, in which the carbon and hydrogen are still in the proportion of 1 : 2, and in all the transformations of these bodies this proportion remains constant. Hence, if we know the composition of any derivative of spirits of wine, we can also foresee that of a similar product derived from another alcohol.

(*a*) In speaking of Gerhardt's theory I shall always use his own formulæ.

Substances like those mentioned, resembling one another in their chemical characters on account of similarity of constitution, are denominated *homologues;* while those which resemble one another merely in their physical properties are called *analogues.* Thus, for instance, wood spirit and acetone resemble one another in being inflammable, volatile, and soluble in water; but this resemblance is only analogous: but if we compare wood spirit with spirit of wine, or oil of potato-spirit, we find that in their constitutions, and in the products of their decomposition, they are closely related, and are, therefore, homologues.

In homologous bodies the carbon and hydrogen may vary in their proportions, but the oxygen and nitrogen are always constant.

All carburetted hydrogens (analogous to Laurent's nuclei) are designated in general formulæ by R; bodies like alcohol, containing one equivalent of oxygen, by RO; those containing two of oxygen, by RO_2; and those containing nitrogen, sulphur, &c., in a similar manner.

Homologous bodies must not only be represented by the same general formula, but the ratio between the proportions of carbon and hydrogen must be also the same. Thus, formic acid, $CH_2 O_2$; acetic acid, $C_2 H_4 O_2$; valerianic acid, $C_5 H_{10} O_2$; and ethalic acid, $C_{16} H_{32} O_2$; are expressed by the general formula, RO_2; R representing for each of them a compound in which the carbon and hydrogen are in the proportion of 1 : 2. These bodies are, therefore, homologous. This is the simplest ratio, and is, therefore, selected as the standard; but is not the most frequent. The hydrogen is in general less than 2, and when it exceeds it, the excess is seldom more than two equivalents.

When homologous bodies are decomposed into other homologues they lose or gain the same number of atoms of carbonic acid, water, oxygen, &c. When converted into hydrocarbons they lose one equivalent of water; and in the formation of acids they have one atom of hydrogen substituted by one of oxygen. Hence, a geometrical ratio between the elements of homologous substances is not necessary; bodies having the following proportions of C and H may be homologues:

C	H		C	H	
1	4	= 1 : 2 + 2	4	4	= 4 : 8 − 4
2	4	= 2 : 4 + 2	6	8	= 6 : 12 − 4
5	12	= 5 : 10 + 2	8	12	= 8 : 16 − 4
16	34	= 16 : 32 + 2	16	28	= 16 : 32 − 4

And the same principle applies to any other proportions of these elements. In the first column each compound, by losing two equivalents of hydrogen, is reduced to the standard ratio of 1 : 2; and in the second the addition of 4 is required.

Gerhardt expresses the ratio of 1 : 2 by the symbol R, and when the proportion of hydrogen is greater, the number of equivalents is

expressed by an exponent preceded by the sign *plus* (+); and when the ratio is less, by a similar exponent with the sign *minus* (–). Thus wood spirit, CH_4O; alcohol, C_2H_6O; oil of potato spirit, $C_5H_{12}O$; and ethal, $C_{16}H_{34}O$; are homologues of the form $R^{+2}O$: and the acids derived from them by the removal of two equivalents, and the addition of one of oxygen, are expressed by the formula, RO_2. Oxalic acid, $C_2H_2O_4$; succinic acid, $C_4H_6O_4$; pimelic acid, $C_7H_{12}O_4$; and suberic acid, $C_8H_{14}O_4$; are homologues of the form $R^{-2}O_4$: oxamide, $C_2H_4N_2O_2$, and succinamide, $C_4H_8N_2O_2$, are homologues of the form RN_2O_2. Cinnamene, C_8H_8, and cedrene, $C_{16}H_{24}$, are homologues of the form R^{-8}, &c. If we want to determine whether two bodies having the same amount of oxygen can be homologues, we assume a number of equivalents of hydrogen equal to twice that of the carbon (that is, the proportion of 1:2), and see whether the excess or deficiency of hydrogen is the same in both, and consequently whether they can be expressed by the same general formula.

Gerhardt classes homologous bodies, according to their carbon, in a tabular form. Those containing the same proportion of carbon constitute a family, which is designated by the number of atoms of that element. Each family is divided into the carburets of hydrogen and those containing oxygen, nitrogen, &c., so that we have R, RO_2, RN, &c. These divisions are found on the left of the table, and at the top are marked, at the head of each column, the respective proportions of hydrogen. This may be better understood by the following view of the first and second families.

Family.	General Formula.	R^{+2}.	R.	R^{-2}.
2	R	C_2H_6, acetene.	C_2H_4, olefiant gas.	
	RO	C_2H_6O, (*a*) alcohol. (*b*) methylic ether.	C_2H_4, aldehyde.	
	RO_2	. . . . .	$C_2H_4O_2$, acetic acid.	
	RO_4	. . . . .	. . . . .	$C_2H_2O_4$, oxalic acid.
1	R	CH_4, marsh gas.	. . . . .	
	RO	CH_4O, wood spirit.	. . . . .	CO, carbonic oxide.
	RO_2	. . . . .	CH_2O_2, formic acid.	CO_2, carbonic acid.

By this arrangement we can at once give a new substance a place, and determine its relation to other compounds. Those bodies which are homologues are always found in the same column; and hence, by looking over the table, we can at once see in what families homologues of any particular form exist, and how these may be formed from other bodies of the same family. Still it cannot be denied that it is rather too artificial, and dependent on accidental properties. Gerhardt also adopts the view that acids are salts of hydrogen, a metal being substituted for this hydrogen in other salts.

He divides the phenomena of metalepsis, or substitution, into two classes,—those bodies in which hydrogen is replaced by chlorine, bromine, or iodine, and those where oxygen is exchanged for sulphur, selenium, &c. These substitutions take place equivalent for equivalent; and as one of oxygen, according to Gerhardt, corresponds to two of hydrogen, oxygen cannot replace hydrogen like chlorine. This view is opposed to the views of Laurent and Dumas, and to many facts, and it is one of the strongest objections to Gerhardt's view of the equivalents of bodies. But in order to explain the cases where oxygen, or NO_4 (NO_2 Gerhardt), &c., appears to replace hydrogen, in accordance with his theory, he has proposed an hypothesis which he calls accouplement, or the substitution of residues, to distinguish it from ordinary metalepsis. When nitric acid acts on some organic substance, water and a new body containing the elements of the nitric acid are formed; thus, benzine, C_6H_6, with nitric acid, NHO_3, form an equivalent of water, and the new body, $C_6H_5NO_4$. In this compound, NO_2 has been supposed to replace one equivalent of hydrogen; but according to Gerhardt, the hydrogen of one of the bodies unites with the hydrogen of the other, to form water, and the remaining elements are left in combination. This reaction may be thus expressed :—

$$(C_6H_6 - H_2) + (NHO_2 - O) = C_6H_4, NHO_2 \text{ and } H_2O.$$

The residue NHO_2, thus replacing the H_2 in the compound. Such compounds he calls *coupled bodies—corps copulés.*

Another class of combinations are those formed by the direct union of two bodies. Such, for instance, is benzoine, which is a compound of two atoms of oil of bitter almonds. Laurent designates such bodies *syndesmides.*

To suit these views of the composition of bodies, he has made corresponding changes in the nomenclature. He has applied the binomial nomenclature of Linnæus in rather a novel way certainly. He considers one substance as the type of a *genus*, and the bodies derived from it by substitution as the *species.* The type itself is that which contains only the organic elements, and is called the *normal species.* Thus, for example:

Genus Acetate RO_2.

Species.	*Old Name.*	
Normal acetate.	Acetic acid	$C_2H_4O_2$.
Potassic acetate.	Acetate of potash.	$C_2(H_3K)O_2$.
Argentic acetate.	Acetate of silver.	$C_2(H_3Ag)O_2$.
Trichlorinized (acetateacétate trichloré).	Chloro-acetic acid.	$C_2Cl_3H)O_2$.
Trichloro-potassic acetate (acétate trichloro-potassique).	Chloro-acetate of Potash,	$C_2(Cl_3K)O_2$.
Trichloro-argentic acetate (acétate trichloro argentique).	Chloro-acetate of silver,	$C_2(Cl_3Ag)O_2$.

Saline compounds terminate in *ate* and *uret;* the hydrocarbons in *ene;* oxygenized volatile liquids, like the alcohols and essential oils, in *ol;* and the alkaloids in *ine.*

Gerhardt looks upon acids, in the same manner with Laurent, as compounds which can have one or more atoms of hydrogen replaced by a metal, and which unite with alcohols to form ethers with the separation of the elements of water. Gerhardt, however, considers that there are also tribasic acids, which Laurent is disposed to look upon as combinations of simpler ones. The terms *bibasic*, and *tribasic*, are often applied to the combinations of neutral monobasic salts with certain metallic oxides: acetate of lead, for instance, unites with two equivalents of oxide of lead to form the compound known as *tribasic acetate;* in this but one equivalent of hydrogen is substituted by the metal, and the two equivalents of oxide are but feebly united, performing, perhaps, a function analogous to water of crystallization. Gerhardt has proposed a very convenient name for such compounds, namely, *surbasic*, and the compound just mentioned, which is $C_2 (H_3 Pb) O_2 + Pb_2O$, would be *bisurbasic acetate of lead.*

Oxides of the formula M_2O produce neutral salts with acids, water being at the same time eliminated. Oxides of the formula $M_4 O_3$, as the sesquioxide of iron, unite in the same manner, with the separation of the elements of water, but their three equivalents of oxygen form water with the replaceable hydrogen of six equivalents of the acid, and the residue which replaces this is only equal to four equivalents thus. $6C_2 H_4 O_2 + Fe_4 O_3 = 3H_2 O + C_{12} H_{18} Fe_2 O_{12}$. If we would represent this substitution as equivalent $Fe_{\frac{2}{3}}$, written $Fe^{\beta} = H$, then the peracetate of iron is $C_2 H_3 Fe^{\beta} O_2$.

I have already alluded to Gerhardt's idea of substitution of residues or accouplement. Coupled bodies are compounds formed by the union of an organic substance with an acid, with the separation of water, in which neither of the components can be recognised. Those formed by a monobasic acid are neutral; but if the acid polybasic and combines with but one equivalent of the organic substance, the result is a *coupled acid.* Sulphuric acid combines with an immense number of substances in this way.

The baryta salts of all these acids are soluble in water and frequently in alcohol. The basic power of a coupled acid is, according to Gerhardt, equal to the sum of the powers of its component bodies, less one, or, in other words, one atom of the coupled acid saturates one atom of base less than its components, when separate, would saturate. According to this view, sulphuric, carbonic, and sulphurous acids, should be looked upon as bibasic acids.

Gerhardt says that nitric acid cannot form a coupled acid with neutral bodies, because it is monobasic, a fact which is contradicted by the nitro-leucic acid, and nitro-glycocolic acids, which are both monobasic. But its action upon monobasic acids yields a series of azotized acids, which are themselves monobasic.

Want of space alone prevents me from noticing many other remarkable views of his; for the same reason I am compelled to leave

unnoticed the classification of genera according to their types and chemical functions. Those who require more information than they can glean from such a short and imperfect notice as this is, will find this remarkable work worthy of a careful perusal. These views of Laurent, Dumas, Gerhardt, and Gmelin, mark an era in chemistry; as they form the first real attempt made since the days of the great Berthollet, to bring chemical phenomena, more especially organic, within the limits of ordinary mechanical laws; and the time is not far distant, I hope, when it will be possible to rank chemistry also among the mathematical sciences.

To those who may wish for more information on the subject, a few references to the original memoirs may not be unacceptable: Dumas, Substitution Theory(*a*); Substitution and Polybasic Acids(*b*); Theory of Types(*c*): Dumas and Stas(*d*): Dumas and Piria on Types(*e*): Dumas, Substitution Theory(*f*): Gerhardt(*g*).

Laurent,—Theory of Types(*h*); Nomenclature(*i*); Oxidation and Deoxidation of Nuclei(*k*); Substitution by Chlorine(*l*); New Development of the Nucleus Theory(*m*).

Gmelin's new Nomenclature(*n*).—Gmelin has proposed a new nomenclature, which he wishes to have submitted to the criticism of chemists. In his opinion the name of a chemical substance should not only convey the nature of its constituents, but also the number of atoms and their mode of combination. In fact it should be a rational chemical formula expressed in a word.

To effect this object, without making the name too long, he proposes that each element should be expressed by a word of one syllable, and the number of atoms (as Laurent has already done) indicated by a change in the vowels; thus,

a	*e*	*i*	*o*	*u*	*ai*	*aü*	*au*	*oe*	*ue*
1	2	3	4	5	6	7	8	9	0

The sounds of these diphthongs are very distinct in German, but not in English, so that there must be some change made in it to suit the pronunciation of each country.

The elements could receive the following names: O = ane; H = ale; C = ase; B = are; P = ape; S = afe; I = asche; Br. = ame; Cl = ake; Fl. = alfe; N = ate; K = pate; Na = nate; Ba = bare; Ca = care; Mg = talke; Al = talme; Pb = plambe; Fe = marte: Ag = targe; Pt = plate, &c.

(*a*) *Annales de Chimie et de Physique*, lvi. 139; lvii. 318; lviii. 14.
(*b*) *Comptes rendus*, 6, No. 24.
(*c*) *Annal de Chim. Phys.*, lxx. 73; *Compt. Rend.*, x. 149.
(*d*) *Annal. de Chim.*, lxxiii. 113.
(*e*) *Noveaux Annal. de Chim. et Phys.*, v. 353.
(*f*) *Rev. Scientifique*, i. 150.
(*g*) *Précis de Chimie Organique*, tom. i. ii. Paris, 1844, 1845.
(*h*) *Annal. de Chim. Phys.*, lxxii. 409.
(*i*) *Nov. Annal. de Chim. Phys.*, iii. 463.
(*k*) *Compt. rend.*, xvi. 856. (*l*) *Rev. Scientif.*, ix. 5.
(*m*) *Compt. rend.*, xvii. 311; xix. 1089; also *Rev. Scientif.*, xvi. 163, 395.
(*n*) *Handbuch der Chemie vierte Auflage*, bd. iv. 131.

In combination the elements lose the final short *e*, and the *a* changes, when they enter into combination in more than one atom, into the vowel which expresses that number. Thus, for example, HO = alan; HO_2 = alen; CO_2 = asen; SO_2 = afen; SO_3 = afin; S_2O_2 = efen; S_2O_5 = efun; S_3O_5 = ifun; S_2Cl = efak; PCl_3 = apik; PCl_5 = apuk; NH_2 = atel; NH_3 = atil; KO = patan; Al_2O_3 = telmin; Fe_2O_3 = mertin; Fe_3O_4 = mirton.

As *ue* has the value of *o*, all oxygen compounds may, therefore, be designated as *uenides;* all hydrogen compounds as *uelides;* all chlorides as *uekides*; sulphurets as *uefides;* combinations of iron as *muertides:* all oxides of iron as *muertuenides;* all sulphurets of iron as *muertuefides*, &c.

Simple salts would receive such names as the following: KO, CO_2 = patan-asen; BaO, SO_3 = baran-afin; AgO, NO_5 = targan-atun; KCl, $PtCl_2$ = patak-platek.

The number of compound atoms in a body is expressed by vowels also; but these vowels are distinguished from those indicating the number of atoms of *elements*, by having a *j* placed before or after them (a letter which does not occur in the name of any element); thus, KO, $2CO_2$ = patan-ejasen, the vowel before the *j* indicating the two atoms of carbonic acid, while the vowel after it indicates the number of atoms of carbon in an atom of carbonic acid; KO, $3IO_5$ = patan-ijaschun; 6PbO, NO_5 = jaiplambamatun. The *j* is placed before when the name of the element commences with a vowel, and after the vowel to be multiplied when the name begins with a consonant. Thus, KO, SO_3 + MgO, SO_3, or KO, MgO, $2SO_3$ = patan-afin-talkan-afin, or better, patan-talkan ejafin.

Constitutional water, written in formulæ as HO, is called alan; 2HO = elen, &c.; but water of crystallization, written in formulæ as Aq, is called *was* (from *Wasser*, German of water), pronounced long. The number of atoms is expressed as follows:

was,	wes,	wis,	wos,	wus,	wais,	waüs,	waus,	wues,	wasue,	wasa,
1	2	3	4	5	6	7	8	9	10	11

wase, &c.,
12 atoms.

Thus, NaO, SO_3 + 10Aq, would be natan-afin-wasue; 2Na O, HO. PO_5 + 24Aq, would be jenatan-alan-apun-weso; NH_4O, Al_2O_3, $4SO_3$ + 24Aq, one of the most complicated formulæ, would be atolan-telmin-ojafin-weso, a word which is certainly longer than ammonia-alum, but shorter than crystallized sulphate of ammonia and alumina, and even than the formula, which has eighteen syllables when read, while the new name has only ten.

The names of organic compounds could not be formed from the names of the elements and vowels alone, because the number of atoms is too great. It is, therefore, necessary that each fundamental nucleus should receive a certain name, by whieh the greater part by the C and H atoms in a compound would be expressed. The number of those atoms which either alter the fundamental nu-

cleus by substitution, or which form an envelope by depositing themselves on it, seldom exceed eight, and can, therefore, be easily expressed by vowels. Derivative nuclei, which have a great number of substituted atoms, as, for instance, the varieties of sugar, should probably also receive a particular name. The nuclei, in order to be readily distinguished in the name of a compound, should commence with a consonant, and be terminated by a consonant followed by a short *e*. In order to distinguish nuclei from metals, *a* and *e* should not be included in their names, as the metals very seldom enter into combination in more than one or two atoms; they would, therefore, always occur with an *a* or *e*, while nuclei never enter into combination in more than one atom, and therefore the vowel or diphthong in their names would never change; the only exception being some of the bodies termed by Laurent *homodesmids*. Thus stilbene, $C_{28}H_{12}$, is considered as a compound of two atoms of benzene; and benzoine, $C_{28}H_{12}O_4$, a compound of two atoms of oil of bitter almonds.

The present names of nuclei should be more or less changed, and in the new names the etymology must have a very subordinate value. Thus, palene, C_2H_2, should be changed into forme; ethene, C_4H_4, into vine; butyrene into bute; amylene, or mylene, $C_{10}H_{10}$, into myle; phaene, or phaenene, $C_{12}H_6$, into fune; benzene, $C_{14}H_6$, into bunze; salene, $C_{14}H_8$, into tole (from balsam of tolu); cinnamene, or styrol, $C_{16}H_8$, into styre; &c. &c.

When a fundamental nucleus changes into a derivative one, the final *e* is dropped, and the name of the substance which is substituted for it, with the vowel expressing the number of atoms, added to it. The derivative nucleus, C_4H_3O, of vine, which is hypothetically assumed to exist in acetic acid, is thus vinan; and the derivative nuclei produced from vine by the action of chlorine, C_4H_3Cl; $C_4H_2Cl_2$; C_4HCl_3; C_4Cl_4, are respectively vinak, vinek, vinik, and vinok. Indigo, considered as a derivative nucleus of styre, $C_{16}H_8$, is styraten. The accent should always be on the syllable expressing the nucleus.

As hydrogen is also substituted by NO_4, NH_2, and probably also by NH, and also by SO_2, it would be of advantage to express them by the simple syllable *art* (from nitro), *amt* (from amide), and *aft*. Thus, nitrobenzide, $C_{12}H_4X_2$, would be *funert;* phtalamide, $C_{16}H_3$ Ad O_4, would be *styramton;* sulphobenzide, $C_{12}H_4(SO_2)$, would be *funaft*.

If the nuclei have envelopes, the elements of the envelope are placed before those of the nucleus, but the vowel is placed before the consonant, so as to distinguish the envelope from the nucleus; thus, instead of *an*, *na;* instead of *al*, *la*, &c. Thus, marsh gas, C_2H_2, H_2, is *leforme;* aniline, $C_{12}H_5N$, H_2, is *lefunat;* aldehyde, C_4H_4, O_2, or C_4H_3O, HO, is *nevine*, or *lanavinan;* acetic acid, C_4H_4, O_4, or C_4H_3, O, HO_3, is *novine* or *lanivinan;* mercaptan, C_4H_4, H_2S_2, or C_4H_3S, H_3S, is *lefevine*, or *lifavinaf*.

Relation between the Chemical Equivalents of Bodies and the Density of their Vapours(*a*).—Mariotte discovered the first simple law relating to the permanent gases,—that the density is directly as the pressure. Gay-Lussac discovered another law,—that all gases expand equally by the addition of equal increments of heat; that is, that the coefficient of expansion is the same for all gases and all temperatures; and a third, that gases combine chemically in the proportion of simple volumes.

The researches of Magnus and Regnault have shewn that the equality of the coefficient of expansion is only approximately true when the gases are in a perfectly aeriform state, and that even at ordinary temperatures a marked difference in their rate of expansion occurs, and that the coefficients change with increase of temperature in the case of the denser gases.

But these variations from the laws of Gay-Lussac are much greater with vapours, particularly as they approach the point of greatest density. What has led principally to the investigation of the tension of the vapours of so many organic liquids was the idea that the law of combination by volumes could also be applied to liquids and solids. The experiments of Bineau on the vapours of acetic, formic, and sulphuric acids, made with reference to this point, are extremely important.

The apparatus which he employed consisted of a balloon, to which a tube eight decimeters long was soldered. This was inserted by means of a cork, with the balloon uppermost, into the bell-glass of an air pump. As soon as the air was exhausted as much as possible, the tube was pushed through the cork, until the orifice dipped into a deep vessel of mercury placed in the bell-glass. When the air was again admitted, the quicksilver rose in the tube to a height approaching that of the barometer, in proportion as the exhaustion was complete. The apparatus was then taken out of the bell-glass, and the height of the quicksilver compared with that of a barometer which dipped into the same vessel of mercury. A quantity of the liquid to be examined, the weight of which was accurately determined, and which was always less than what would be sufficient to fully fill the balloon with vapour, was put into a glass bulb, and allowed to rise through the mercury into the balloon, and care taken to completely volatilize it. The height of the quicksilver and the temperature were again taken, and the volume which the mixture of air and vapour occupied determined. This differed so little from that of the air alone, that it may be considered as the same.

If we call this volume V, the tension of the air f, that of the mixture f', the corresponding temperatures t and t', and the apparent expansion of an unit volume of air under small pressure

(*a*) Bineau, *Compt. rend.* tom. xxiii. p. 414; also *Pogg. Annal.* lxx. p. 172.

(0·00363) a, and the quantity of liquid P, the density of the vapour will be thus expressed :

$$D = \frac{P}{17.1\,V\left(\frac{f'}{1+a.t'} - \frac{f}{1+a.t}\right)}$$

in which a milligramme is the unit of weight and the millimetre the unit of length.

The volume of air in different experiments remained nearly constant = 5^{lit}·52. The tension of the air at 0° $\frac{f}{1+a.t}$ had a constant value = 10·64. But the value $\frac{f'}{1+a.t}$ should, on the other hand, vary with the temperature, if the vapour did not follow the laws of Mariotte and Gay-Lussac.

Bineau found for acetic acid, by using eighty-four milligrammes:

Temperature.	$\frac{f'}{1+a.t'}$	$\frac{f'}{1+a.t'} - \frac{f}{1+a.t}$	Densities.	Tension of Vapour.
12°	12·98	2·34	3·80	2·44
19°	13·07	2·43	3·66	2·60
22°	13·14	2·50	3·56	2·70

The greatest tension of the vapour of acetic acid is 7.7 millim. at 15°, 14.5 millim. at 22°, 23 millim. at 32°.

These experiments shew, first, that the vapour of acetic acid, even under such pressures as are too weak to convert it into the liquid state, expands and contracts from 2 to 2.5 times as much as air; and second, that the vapour of acetic acid *does not by any means follow the law of Mariotte.* Its density, compared with that of atmospheric air, increases with the pressure, if the temperature remains constant.

	At 20°.				At 30°.	
Tension,	4·0	5·6	8·5	10·0	6·0	10·7
Density,	3·74	3·77	3·88	3·96	3·6	3·73

Notwithstanding the enormous rarefaction of the vapour, on account of the very small pressure, the vapour of acetic acid maintains an anomalous density, which varies very much from that which should correspond to the high temperatures; thus it has a density of about 3.7 at from 15° to 20° under a pressure of 2·5 millimetres, while at 250°, under the pressure of an atmosphere, it only amounts to 2·1.

Cahours suspected that the density of the vapour of formic acid at high temperatures corresponds to one-fourth of the equivalent, a view which Bineau's experiments confirm.

The vapour of formic acid expands still more than that of acetic

acid, and at low temperatures it is nearly double what it is at 200° Cent.

He also found the vapour of sulphuric acid as anomalous as those just mentioned.

Relation between the specific Gravity of Fluids and their chemical Composition(*a*).—If we divide the atomic weight of a body by its specific gravity, we obtain a number which is called its *atomic or specific volume*, and which is supposed to express the relative volume which an atom of such a simple or compound body occupies. As we obtain the atomic volume by division of the atomic weight by the specific gravity, so we obtain the specific gravity by dividing the atomic weight by the atomic volume. Schröder was the first who broached the idea that (under certain restrictions) the specific volume of a compound was equal to the sum of the specific volumes of its constituents. This, if true, would be of great importance, as we could at once determine whether an assumed formula was correct, by calculating its specific gravity, and comparing it with the result obtained by experiment. Kopp, Schröder, and Löwig have each proposed a view of the subject. But as yet the only thing in which they agree is, that the atomic volume of fluids should be determined for corresponding temperatures, that is, for temperatures at which their vapours possess equal elasticities, and, consequently, most advantageously at their boiling point. But as the specific gravities of liquids are seldom determined for these points, the observed values are reduced by means of the numbers obtained by Gay-Lussac for the expansion of alcohol, or, what is the same thing, the atomic volumes of the constituents are corrected by means of them. Now, however, that the expansions of a great number of fluids have been determined, such coefficients of expansion may be employed for the respective substances instead of Gay-Lussac's numbers. In every other particular their views differ, but none of them has been sufficiently developed to be preferred to the other.

Kopp retains the usual atomic weights, and takes the atomic volumes at the boiling temperature, for $O = 6 \times 9{\cdot}75$, of $H = 3 \times 9{\cdot}75$, and of $C = 8 \times 9{\cdot}75$. The agreement between the observed and calculated specific gravity is not always satisfactory. Schröder considers the atomic volumes of C, O, and H, at the boiling point, as equal, that is, for the double atoms, C_2, O_2 H_2 (the double atom of H is here twice that of Berzelius) = 10·379. This view is certainly recommended by its simplicity; nor is it any objection to it that Schröder, in reference to the atomic weight, writes the chemical formulæ of substances so as to express four volumes in the gaseous state, for if these are inadmissible, the theory only requires a simple condensation of 2:1. Besides this view gives the specific gravity with great accuracy, but, unfortunately, is not always applicable.

(*a*) Löwig, *Chemie der Organischen Verbindungen*, 2te Auflage, vol. ii. 1846.

Löwig assumes that the specific volumes of the different elements stand in close relation with their atomic weights. If we suppose the atomic weights of H, C, O, N, and Cl = 1, 6, 8, 14, and 36, their atomic volumes will be 1, 3, 4, 7, and 9, respectively; that is, a double or quadruple condensation compared to hydrogen. Taking the atomic weight of O = 100, he supposes the specific volume of H to be 44, that of C, 132, that of N, 308, and that of O, 176. But the volume of H in organic compounds can undergo a condensation of three-fourths, one-half, or one-fourth, by which the atomic volume decreases from 44 to 33, 22, and 11, respectively. The volume of the other element just mentioned can also undergo, in certain combinations besides these three, condensations of two-thirds and one-third. Thus, benzine, $C_{12} H_6$, has a specific gravity of 0·85, its atomic weight (O = 100, C = 75, H = 12·5) is 975; this divided by 0·85 = 1147, which is the specific volume calculated from the specific gravity. If we add twelve specific volumes of C condensed to two-thirds = 12×88, and six specific volumes of H condensed to one-half = 6×22, we obtain the sum 1188, which is also the specific volume of benzine. But this calculated specific volume is greater than that obtained from the observed specific gravity, and therefore yields a less specific gravity by division into the atomic weight, viz., only 0·821, than that obtained by experiment.

Löwig's observation, that the specific volume of a compound is not changed by the addition of O, would be extremely important if verified. Thus if we compare oil of turpentine, $C_{20} H_{16}$ (atomic weight, 136; sp. gr., 0·87; boiling point, 157° Cent.); camphor, $C_{20} H_{16} O_2$ (at. w., 152; sp. gr., 0·986; b. p., 204° Cent.); and camphoric acid, $C_{20} H_{16} O_8$ (at. w., 200; sp. gr., 1·194; b. p., 270° Cent); we obtain the specific volume of oil of turpentine = 156; of camphor = 154; and of camphoric acid = 167; results which are favourable to his view. The great objection to Löwig's view is that the amount of the condensation which he assumes is to be chosen at hazard from several numbers.

Researches on the Dilatation of Liquids. By J. Isidore Pierre(*a*). —Pierre, in three long and valuable memoirs, has published the results of his experiments on the dilatation of water, sulphuret of carbon, alcohol, methylic alcohol, ether, chloride of ethyle, bromide of ethyle, iodide of ethyle, the chloride, bromide, and iodide of methyle, formic ether, acetate of oxide of methyle, acetic ether, butyrate of oxide of methyle, butyric ether, $Cl_3 P$, $Br_3 P$, $Cl_3 As$, $Cl_2 Sn$, $Cl^2 Ti$, Cl Si, Br Si, $C_4 H_4 Cl_2$, $C_4 H_4 Br_2$, and bromine; and from these experiments, for the numerical values of which I must refer to the original memoir, he has concluded, that the mean coefficient of absolute dilatation, and the true coefficient for those liquids, increase with the temperature; that the true coefficient always exceeds the mean coefficient at temperatures above the freezing point, and the reverse at those below; but it is not pos-

(*a*) *Annales de Chimie*, xix. p. 193; and xx. p. 5.

sible to establish any relation between the amount of the difference and the boiling point of the liquid.

The true coefficient always increases more rapidly than the mean coefficient, and for an interval of at least 132° Cent. the variation increases as 80 to 100. Hence the error of employing the mean coefficient in calculations, relative to the variation of the volume of liquids, or of employing a mean coefficient for small intervals.

Amylic, ethylic, and methylic alcohols follow the same law of contraction, if we take their boiling points as the points of departure, and compare them at intervals equidistant from those points. Bromide of ethyle and bromide of methyle follow the same law, as do also acetate of oxide of methyle and acetate of oxide of ethyle; and butyrate of oxide of methyle and butyrate of oxide of ethyle.

In fact, all analogous bodies, or what Gerhardt calls *homologues*, derived from ethylic, methylic, and probably also amylic alcohols, follow the same law of contraction, when compared at points equally distant from their respective boiling points.

Two liquids formed by the combination of a common element with isomorphous elements, starting from their boiling points, follow very different laws of contraction; or, in other words, two equal volumes of liquids similarly constituted, commencing from their boiling points, do not maintain their equality of volume. This difference is generally very great, but may be in some measure attributed to errors of observation.

The difference of contraction increases, and always in the same way for each group of liquids, as the temperature recedes from their boiling points. This difference sometimes becomes very great, as in the group formed by chloride and bromide of silicium. In fact, it sometimes amounts to one-half of the whole amount of contraction of one of the liquids.

The variation of the true coefficient of dilatation is five times greater for chloride of silicium than for the bromide.

In general the most dilatable liquid in a group has also the lowest boiling point. This does not, however, apply to liquids not belonging to the same group.

These results, although not leading as yet to any general law, shew how important the subject is; and Pierre expresses a hope that it will be taken up simultaneously by a great number of chemists and *physiciens*.

Researches on the specific Gravity, Expansion, and boiling Point of Liquids(*a*). By H. Kopp.—In all the investigations which have been hitherto made on the specific volume of bodies, the change produced by differences of temperature was overlooked. In fact, until very lately, the expansion of only three fluids, water, alcohol, and ether, had been determined. Kopp investigated eighteen substances, which he chose with reference to their bearing on his theory of atomic volumes. As the tension of the vapours of most bodies has not been determined as yet, he calculates the specific volume of each sub-

(*a*) Poggendorff's *Annalen*, lxxii. pp. 1, 223.

stance at its boiling point, that is, when the tension of the vapour is equal to 760 millimetres of the barometer: want of space alone precludes any notice of the mode in which he conducted his experiments, or of his tables of expansion. His results on dilatation agree very closely in general with those of Pierre, just noticed. The following table shews the specific gravities, boiling points, and specific volumes corrected for dilatation, which he has deduced from his experiments.

Substances.	Boiling Point, Bar. 760mm.	Mean Sp. Gr. at 0° Cent.	Specific Volume at 0° Cent.	Specific Volume at Boiling Points of Liquids.
Water, ...	100°	1	9 (H=1)	At 100 Cent. 9.387
Wood spirit, hydrate of oxide of methyle, $C_2 H_4 O_2$,	65·5°	0·81796	39·122	At 65·5° 42·388
Alcohol, ...	78·4°	0·80950	56·825	At 78·4° 62·222
Oil of potato spirit, hydrate of oxide of amyle, $C_{10} H_{12} O_2$	131·1°	0·8253	106·63	At 131·1° 123·28
Ether, $C_4 H_5 O$, ...	34·9°	0·73658	50 233	At 34·9° 53·099
Aldehyde, $C_4 H_4 O_2$, . . .	20·8°	0·80092	54·936	At 20·8° 56·867
Acetone, $C_3 H_3 O$, . . .	56·3°	0·81440	35·609	At 56·3° 38·680
Benzol or benzine, $C_{12} H_6$,	80·4°	0·89911	86·752	At 80·4° 96·037
Formic acid, $C_2 H_2 O_4$, . .	105·3°	1·2227	37·623	At 105·3° 41·830
Acetic acid, $C_4 H_4 O_4$, . .	117·3°	1·08005	55·554	At 117·3° 63·447
Hydrated butyric acid, $C_8 H_8 O_4$, ...	157·0°	0·98862	89·012	At 157° 106·74
Formiate of oxide of methyle, $C_4 H_4 O_4$, . . .	33·4°	0·99840	60·097	At 33·4° 63·138
Formic ether, $C_6 H_6 O_4$, .	54·9°	0·94474	78·328	At 54·9° 84·738
Acetate of oxide of methyle, $C_6 H_6 O_4$, ...	56·3°	0·95620	77·390	At 56·3° 83·872
Acetic ether, $C_8 H_8 O_4$, . .	74·3°	0·91046	96·654	At 74·3° 107·44
Butyrate of oxide of methyle, $C_{10} H_{10} O_4$, ...	95 9°	0·92098	110·75	At 95·9° 126·26
Butyric ether, $C_{12} H_{12} O_4$,	114·8°	0·90412	128·30	At 114·8° 149·73
Valerianate of oxide of methyle, $C_{12} H_{12} O_4$, . . .	116·2°	0·901525	128·66	At 116·2° 149·58

These results agree very well with Kopp's theory of atomic volumes, and certainly form a very valuable contribution to science.

Heat developed by chemical Combination.—Abria(*a*) found, as the mean of five experiments, that one litre (at 0° Cent. Bar. 76 centm.) of dry hydrogen, by combination with one litre of dry chlorine gas, yielded 2151 calorific units (a calorific unit is the quantity of heat necessary to raise the temperature of one gramme of water by 1° Centigrade). The accuracy of this number was controlled by the following experiment. Chlorine gas saturated with moisture, water being also introduced into the space where the combustion took place, gave 3455 calorific units. The quantity of heat which one

(*a*) *L'Institut*, t. xiv. p. 635.

gramme of hydrochloric acid developes in its condensation by an excess of water was determined to be 392 units. According to this the 3.326 grammes of hydrochloric acid formed in the above experiment developed 1304 units. If we subtract this number from 3455, we obtain, for the quantity of heat developed by the dry gas, the number 2151, which corresponds with the mean of the direct experiment. As one litre of hydrogen gas, by its union with oxygen, supposing the water formed to remain in the state of vapour, yields 2629 units, we see that hydrogen, by its union with chlorine, developes only eight-tenths of the heat produced by burning it with oxygen.

Favre and Silbermann(*a*) have determined the heat developed by combustion. Many of their results agree with those obtained by Grassi. They have not described the apparatus used in these experiments, but it would appear to resemble in most particulars that employed by Grassi. Their results are the more valuable as they collected in every case the products of combustion, and weighed them.

Strongly ignited wood charcoal, over which a stream of chlorine was passed while in a state of ignition, was introduced in powder into the apparatus, and weighed. The apparatus was then filled with oxygen gas, and the charcoal set fire to, and towards the end of the combustion a stream of oxygen was passed over it, which carried the products of the combustion into the apparatus in which they were weighed. The CO_2 and CO obtained should always be equivalent to the carbon employed. Carbonic oxide is always formed by the burning of charcoal in oxygen, but in very varying proportions. It was, therefore, necessary to determine the quantity of heat which is developed by the burning of carbonic oxide. In order to burn it completely, it was mixed with half as much hydrogen gas, and burned with oxygen, and the heat developed by the burning of the hydrogen subtracted from the total heat. One gramme of carbonic acid yielded, as a mean of two experiments, 2432·7 calorific units.

Wood charcoal, completely burned, gave, as the mean of five experiments, 8086·2 calorific units, which gives 2480·6 as the number of calorific units developed by charcoal when converted into carbonic oxide.

In another series of experiments, in which they satisfied themselves of the complete absence of hydrogen, they obtained as the mean of thirteen experiments with charcoal, previously treated in different ways to remove hydrogen, &c., the number 8080.

From *sugar charcoal*, which contains no hydrogen, and is most difficult to burn, they obtained 8035 and 8039.

Gas coke, ...	8037 and 8058
Graphite from iron furnaces, mean of four experiments, ...	7762·25
Natural graphite, mean of four experiments,	7796·5
Diamond, mean of two experiments, . .	7824·5

(*a*) *Compt. rendus*, t. xx. xxi. xxii. xxiii.; also Liebig's *Annalen*, lx. p. 165.

A much greater difference exists between these results than between those above given.

They have noticed a singular fact, for which as yet no explanation can be found, namely, that if carbon be burned in protoxide of nitrogen there is much less light produced; but on the other hand, 10841 calorific units are developed (mean of six experiments), or nearly 3000 more than when burned in oxygen.

Development of Heat by the burning of Marsh and Olefiant Gases.—The marsh gas prepared from acetate of soda, and perfectly pure, gave as a mean of three experiments, 13158·2 for one gramme of gas. If we subtract from this the quantity produced by the hydrogen (3446·2 calorific units for one gramme of gas), we obtain for one gramme of carbon in marsh gas, 5953·6 units,—a quantity much less than what is obtained from one gramme of carbon in a free state.

Olefiant gas gave, as the mean of two experiments, 8083·5 for one gramme of gas, or just as much as when free.

They also determined the amount of heat developed by the burning of a great number of bodies of the formula (CH)n. They state that the results of different experiments with the same body seldom varied more than thirty calorific units. Among the other bodies examined by them the following may be given.

	Calorific Units.		Calorific Units.
Paramilène (carbo-hydrogen),	11491	Ether,	9027
Amilène,	11393	Amylic ether,	10188
Carbo-hydrogen (boiling point 180° Cent.),	11262	Formic acid,	1712
Cetene,	11117	Acetic acid,	3405
Metamilène,	10928	Butyric acid,	5623
Wood spirit,	5304	Valerianic acid,	6439
Spirit of wine,	7183	Ethalic acid,	9316
Oil of potato spirit,	8959	Stearic acid,	9716
Ethal,	10600	Acetone,	7320
		Spermaceti,	10342
		Wax (bees'),	10500

They have also examined the following ethers:

	Calorific Units.		Calorific Units.
Formiate of oxide of methyle,	4197	Butyrate of oxide of ethyle,	7096
Formic ether,	5187	Valerianate of oxide of methyle,	7376
Acetate of oxide of ethyle,	6300	Valerianate of oxide of ethyle,	1385
,, ,, methyle,	5342	Acetate of oxide of amyle,	7971
Butyrate of oxide of methyle,	6776	Valerianate of oxide of amyle	8544

Carbo-hydrogens of the formula $C_{10} H_8$.

Oil of turpentine,	10874
Oil of lemons,	10959
Terebene,	10663

These results shew that if we subtract the oxygen together with the hydrogen necessary to convert it into water, the remaining elements do not develope as much heat as they would in a free state. The same is the case where two atoms of oxygen are considered to exist already in the form of water, with the exception of oil of potato spirit, as is also the case where we consider one atom of water to exist in the alcohols. This fact, according to Favre and Silbermann, contradicts the assumption of alcohols being hydrates of ethers. But marsh gas also gives less heat than its elements would when free.

Different isomeric bodies give different quantities of heat (?).

They examined sulphur in its different forms, such as the natural, crystallized from sulphuret of carbon, &c.; and, as the mean of thirteen experiments obtained the number 2232·6. In combination, as sulphuret of carbon, the mean of two experiments gave 3403·4. The elements, if free, would have given 3145·3, that is, when combined they yield 255·1 more than if both were free.

Specific and latent Heats of Bodies.—Favre and Silbermann have also made a series of investigations on this subject. In fact, in comparing the amount of heat developed by burning and other chemical actions, the difference in the specific heats of the bodies burned and of the products, as well as the latent heats of the gases formed, should be taken into account,—what has hitherto been but little attended to. The following are among the most important of the results:

Substances.	Specific heat.	Latent heat.
Carbo-hydrogen { *a* boiling point, 205° cent.,	0·49385	59·90
Carbo-hydrogen { *b* boiling point, 250° cent.,	0·49680	59·70
Wood spirit,	0·67127	263·86
Alcohol,	0·64490	208·31
Oil of potato spirit,	0·58728	121·37
Ethal,	0·51600	58·44
Sulphuric ether,	0·50342	91·11
Amylic ether,	0·52117	69·40
Formic acid,	0·60401	120·72
Acetic acid,	0·50822	101·91
Butyric acid,	0·41420	114·67
Valerianic acid,	0·47857	103·52
Acetic ether,	0·48344	105·80
Butyrate of oxide of methyle,	0·49176	87·33
Oil of turpentine,	0·46727	68·73
Terebene,	0·52409	67·21
Oil of lemons,	0·50233	70·02

The two first carbo-hydrogens have the same per cent. composition, but different equivalents, and their latent and specific heats are equal; as is also to a certain extent the case with the last three.

On the law of the latent Heat of Vapours. By C. C. Person(*a*)—Person considers that the preceding results of Favre and Silbermann on the latent and specific heat of bodies, confirms the law which he proposed in 1843, namely, that the latent heat of vapours is equal for substances which have the same boiling points. That is, that the heat which is required to volatilize substances under the same pressure, is equal when the resulting volumes are equal, and is greater or less according as the resulting volumes are greater or less. The apparent exceptions to this law which some of the substances in the preceding table present, he endeavours to explain by the results of Bineau and Cahours on the specific gravity of the vapour of acetic acid, &c.

Researches on the latent and specific Heat of Bodies. By. C. C. Person.(*b*)—Person gives the following as his experiments on latent heat :—

Substances.	Melting Point.	Latent Heat for Unit of Weight.
Tin, ...	235° Cent.	14·3
Bismuth, ...	270 „	12·4
Lead, ...	320 „	5·15
Zinc, ...	423 „	27·46
D'Arcet's alloy$_2$, Pb Sm_2 Bi_3, . .	96 „	5·96
Fusible alloy, Pb Sn_2 Bi, ...	145 „	7·63
Phosphorus, ...	44·2 „	4·71
Sulphur, ...	115 „	9·175
Nitrate of soda, ...	310·5 „	62·98
Nitrate of potash, ...	339 „	46·18
Phosphate of soda, PO_5 2Na O 24HO,	364 „	54·65
Chloride of calcium, Cl Cao + 6Ho, .	28·5 „	45·79
Yellow bees' wax, ...	62·0 „	43·51

If we examine this and the following table we see that the latent heats do not follow the order of the temperature, and that they are not, also, inversely as the atomic weights, as was supposed. But they are related to the fusing points and specific heats as

$$(160+t)\,\delta = l,$$

where t is the fusing point, l the latent heat, and δ the difference

(*a*) *Compt. rendus*, t. xxiii. pp. 327, 524; also Pogg. *Annalen*, Bd. lxx. p. 386.

(*b*) *Compt. rend.*, t. xxiii. p. 162; also Pogg. *Annalen*, lxx. p. 300.

between the specific heats in the solid and liquid form. This relation may be expressed by the following proposition:—*To obtain the latent heat, the difference between the two specific heats must be multiplied by the number of degrees between* −160° *Cent. and the melting point.* The latent heats calculated by this formula agree pretty well with those observed.

The following are his results on specific heat:—

Substances.	Temperatures between which the Specific Heat was observed.	Specific Heat.
Tin, ...	340° and 240° Cent.	0·061
Bismuth, ...	370 „ 280 „	0·035
Lead, ...	440 „ 340 „	0·039
D'Arcet's Alloy, $PbSn_2B_3$,	300 „ 136 „	0·036
Ditto, ...	136 „ 107 „	0·047
Ditto, ...	80 „ 14 „	0·060
Ditto, ...	50 „ 12 „	0·049
Fusible Alloy, $PbSn_2Bi$, .	330 „ 143 „	0·046
Phosphorus, ...	100 „ 50 „	0·212
Sulphur, ...	147 „ 120 „	0·235
Nitrate of soda, ...	430 „ 330 „	0·413
Nitrate of potash, . . .	435 „ 350 „	0·344
Phosphate of soda, . . .	79 „ 44 „	0·758
Ditto, ...	2 „ −20 „	0·454
Chloride of calcium, . .	127 „ 100 „	0·519
Ditto, ...	100 „ 60 „	0·628
Ditto, ...	60 „ 31 „	0·358
Ditto, ...	28 „ 4 „	0·647
Ditto, ...	2 „ −20 „	0·406
Yellow bees' wax, . . .	102 „ 66 „	0·54
Ditto, ...	58 „ 42 „	0·72
Ditto, ...	42 „ 26 „	0·79
Ditto, ...	26 „ 6 „	0·52
Ditto, ...	2 „ −20 „	0·39
Ice, ...	0 „ −30 „	0·505

This table of the specific heats shews that they are nearly the same in the solid and liquid form for metals. The differences belong to the classes of those produced by change of temperature, and not by a change of the state of aggregation. This equality appears at first sight to upset his formula; but in reality it does not do so, if we consider the formula in its physical sense, and not as an empirical one.

(*To be continued.*)

MEDICAL MISCELLANY.

The Influenza.

[From the Records of the Dublin Medico-Philosophical Society, and the Molyneux Memoirs.]

In a former Number we promised to give some extracts from the unpublished memoirs of the Medico-Philosophical Society of Dublin, of which we gave an account in our Preface two years ago. Upon the present occasion we have selected three very remarkable papers; the first, by Dr. Fleury, was read at the meeting of the Society held on the 1st February, 1776; his remarks apply in an extraordinary manner to the present epidemic of influenza. We may remark that Sir Thomas Molyneux has left on record, in the Philosophical Transactions for March, 1694, an interesting "Account of the late general Coughs and Colds," which prevailed in Dublin in 1693; from which we make the following extract:

"'Twas about the beginning of November last (1693), after a constant course of moderately warm weather for the season, upon some snow falling in the mountains and countries about the time, that of a sudden it grew extremely cold, and soon after succeeded some few days of very hard frost; whereupon rheums of all kinds, such as violent coughs that chiefly affected in the night, great defluxion of thin rheum at the nose and eyes, immoderate discharge of the saliva by spitting, hoarseness in the voice, sore throats, with some trouble in swallowing, wheezings, stuffings, and soreness in the breast, a dull heaviness, and stoppage in the head, with such like disorders, the usual effect of cold, seized great numbers of all sorts of people in Dublin."

In some of the persons so affected, the symptoms were more severe, and attended with somewhat more fever, headach, and intolerance of light. This epidemic, as it then appeared, was not attended with many fatal results, and in general the persons recovered without any treatment, the disease usually terminating in a critical diaphoresis. The duration of the distemper was, in the mild cases, from eight to ten days, and in the more obstinate ones, about a fortnight. So very general did this influenza rage, that few or none escaped; it spared neither rank, age, sex, nor condition. But Molyneux states it as his opinion, that it rather favoured the very old, who seldom were attacked with it. This disease ran its course in about a month, but it was not confined to Dublin alone; London and Oxford were visited by it. It appeared in London about a month sooner than in Ireland; and it likewise progressed through France, Holland, and Flanders.

In the concluding portion of this communication he gives some account of the "Short Fever that visited us in 1688;" and re-

marked, that immediately preceding it, a distemper attended by nasal defluxion (probably glanders) broke out among horses, especially those belonging to the army then encamped on the Curragh of Kildare, and from thence concluded that the like predisposing causes act on man and beast. Molyneux makes many sensible and judicious remarks upon the spread of these distempers, and ventures an observation that subsequent experience has proved correct in other diseases, but more especially in cholera, and that is, that "one may reasonably gather that *these spreading epidemic distempers take their progress from east to west.*"

He seems to have paid considerable attention to the constitution of the atmosphere previous to, and synchronous with, the spread of this influenza ; for in a manuscript note, which he subsequently added to the communication which appeared in the Transactions, he gives a brief history of another universal cold that appeared in 1708, and was immediately preceded by a very sudden transition of atmospheric temperature from heat to cold.

When preparing the memoir on the mortality of Ireland, published in the Census of 1841, we learned many curious facts connected with this disease and its epidemic outbreaks in early times in this country. It is described in a medical manuscript of the fifteenth century under the name of *Fuacht* as well as *Slaodan*, and is mentioned in the Annals of the Four Masters as epidemic in Ireland in the fourteenth century. A disease, the symptoms of which answer to those of influenza, is also alluded to in our early Gælic manuscripts, under the term *Creatan*, probably from *Creat*, the chest ; in this latter signification it is generally applied to old age. John Dymmok, in his "Treatise of Ireland," written about the year 1600, says that "the inhabitants, but especially the sojourners there, be very subject to *rheums*, *cattars*, and *fluxes*."

Rutty witnessed an invasion of an universal epidemic catarrh in 1729 and again in 1737, when he says the weekly bill of mortality for Dublin rose to 144(*a*). "In November," says Rutty, "raged an universal epidemic catarrh, scarce sparing any one family, being attended with a cough, soreness of the breast, with some pain of the head and back, and a slight fever. It was common to us and London, Dorsetshire, &c., and proved fatal chiefly to old persons. It visited London before us, where, in the beginning of the month, there died nine hundred, and by November the 18th, a thousand, which is said to be more than have died in that city in the same space of time since the year 1665. In Dublin, December the 13th, the weekly bill amounted to one hundred and eighteen, near double the usual number. It is said that the like epidemic prevailed over great part of Europe this year."(*b*)

(*a*) We here beg to express our acknowledgment to Dr. C. Croker King for several of the Dublin bills of mortality with which he has presented us. If any of our friends, or the readers of this Journal, possess any of these printed bills, we crave permission to inspect them.

(*b*) "A Chronological History of the Weather and Seasons, and of the prevailing Diseases in Dublin," &c. 1770. Pages 17 and 63.

The years 1762 and 1782 were likewise memorable for its attacks. Many epizootic diseases of remarkable fatality have been recorded by authors as appearing contemporaneously with influenza and other epidemics; an instance of this kind is mentioned as having occurred in 1751 and another in 1764. Although influenza has been occasionally epidemic in Ireland for so long a period, no very violent outbreak of it occurred (or has been recorded) during the present century till 1833–4 and again in the years 1836–7; when, according to calculations made by Dr. Graves, "we may conclude that in Dublin alone more than 4000 people died of the influenza, not taking into account the greater number, who, although they got over the immediate attack of the epidemic, sank afterwards under various diseases of which influenza laid the foundation."—Ed.

Observations on the Epidemic Cold of 1775. By J. C. Fleury, M.D.(*a*)

[Read to the Dublin Medico-Philosophical Society, February, 1776.]

The practice of physic in a great city affords, I think, more frequent opportunities of discovering the mistakes, or detecting the impositions, of many medical writers, than of making accurate observations upon epidemic diseases. By having seen the same disorder often cured under very different treatment, a sensible practitioner will learn, that certain effects which had been either ignorantly or deceitfully declared by these learned gentry to be almost insepa-

(*a*) Dr. Fleury was an eminent practitioner, particularly as an accoucheur, in Dublin, at the period to which his communication refers. In Dr. John Gilborne's "Medical Review, a Poem, being a Panegyric on the Faculty of Dublin; Physicians, Surgeons, and Apothecaries, marching in Procession to the Temple of Fame," 1775,—we meet the following verse:

> "Fleury can symptoms of diseases tell,
> Symptoms of symptoms can distinguish well;
> Assist the labours of the groaning wife,
> And saves the infant's and the mother's life."

The family of Fleury is of French extraction. After the Edict of Nantes, the Fleurys, being Huguenots, fled to Holland. The first Fleury came over as private chaplain to William III., and his wife maid of honour to Queen Mary. He was at the battle of the Boyne, and must have appeared there as part of the "Church militant," for his descendants long preserved the shot-marked gown he wore on the occasion. He afterwards settled, with other French refugees, at Portarlington, where his son, Anthony Fleury, became minister to the French congregation of that place. One of Anthony's sons became Archdeacon of Waterford, and father of the present chaplain of the Molyneux Asylum; and the other, John Charles, the subject of this notice, attained, as we have stated, a high degree of eminence in his profession. On the 23rd November, 1784, he was elected a Licentiate of the King and Queen's College of Physicians, "without examination or expense." He was remarkably near-sighted. He is buried in the little grave-yard at Dundrum, near this city. On his tombstone we read, "Here lieth the body of John Charles Fleury, an eminent and ingenious physician, whose cheerfulness and social wit rendered him the delight of his friends. He died suddenly, on the 29th of September, 1797, aged 64, universally regretted."

rable from the exhibition of certain drugs, are often in strict justice to be ascribed to the salutary efforts of a good constitution. On the other hand, to institute accurate observations upon epidemics, there should be a free and frequent communication of sentiments among the medical practitioners; they should visit their patients more frequently than in general they do; and in order to give them the first opportunity of discovering the genuine nature of such diseases, surgeons and apothecaries should be precluded from prescribing(*a*). This will, I dare say, prove a sufficient apology for my having so very little to offer to your consideration upon this subject, and render it unnecessary to mention several circumstances which have deprived me of leisure to be more full upon the subject. As it seems, however, to have been the sense of this respectable Society, that the medical members thereof should at this time give in their observations upon the late epidemical cold which prevailed so universally amongst us, I shall cheerfully throw in my mite, in the hope and expectation of its stimulating others of greater abilities and more experience to do the subject more justice.

Of the weather I shall only say, that it was, for the season, extremely close, warm, and moist, accordingly this epidemic cold (which made its appearance here about the middle of last October) was less of an inflammatory nature, and affected the nervous system more sensibly than any I ever remember; that of May, 1762, was the first which occurred since I began the practice of physic in this city(*b*).

Exclusive of the common feverish symptoms, a great and sudden languor, dejection of spirits, and prostration of strength, was evident in most of the sick; many complained of a troublesome pain between the shoulders, a very uneasy sensation of heat from the top of the larynx down through the whole chest; a hard, dry, and frequent cough, in the night-time especially, was a very common symptom; a short, quick, and laborious breathing, a small, quick pulse, of a deceitful wiry hardness,—the last two symptoms occurred chiefly in those who were subject to asthma or winter coughs. In most families the servants and children were first attacked; in the latter the cough was almost incessant.

This epidemic cold set in at the tail, I may say, of a bilious fever, which had been prevalent here during the autumnal season; accordingly the inflammatory stage was, as from this combination and the state of the air might well be expected, but short, and soon yielded to moderate antiphlogistic treatment; indeed the great point on which the cure seemed principally to turn was, to carry the bilious saburra down through the great cloaca, without debilitating or irri-

(*a*) From this observation may be learned something of the state of surgery and pharmacy in Dublin seventy years ago.

(*b*) From the dates in this paper, the opinion which we published some years ago as to the periodicity of epidemics receives additional confirmation. See Irish Census for 1841; Medical Momoir, p. xxiii.

tating the nervous system. This eased the breathing, lessened the fever, and relieved the cough. Plentiful dilution too, and saline draughts, with Ælix-paragoricum, appeared to me to be amongst the best pectorals. In a city such as this, where the situation, as well as the manner of life of its inhabitants, often differ widely, and where the apothecary is so generally applied to in the first instance, no method can be laid down for the cure of any disease from which it will not at times be proper to deviate; I may venture, however, I think, to affirm that this epidemic did not require repeated bleeding; numbers recovered, and recovered speedily, who were not bled at all, and those who had been much evacuated that way were evidently the worse of it. Long abstinence from generous diet was injurious to some; their cough increased thereby, and their nights were rendered worse. Emetics, I think, in general, were not indicated.

On the 8th of September, 1776, the following communication was made to the Society:

Remarks upon the Treatment of the Epidemic Cold of 1775. By Daniel Rainey, M. D.(*a*)

This trifle having been mislaid for several months, I thought it might prove of some use, and, therefore, give it to the Society in its present imperfect dress. Whilst the epidemic cold of last year affected such a number of the inhabitants of this city, it is not to be wondered at that it found its way into the House of Industry, an institution founded for the suppression of beggars and sturdy vagabonds, situated to the north-west of the city, in an elevated situation, with nothing but gardens and orchards in its rear. At this time the house contained above 367 paupers, of different ages, from 12 to 90, of different constitutions and temperaments, as may well be supposed among such a collection of people.

Above 200 of these were attacked with the prevailing disorder, and as it manifested *in general* no violent symptoms among the inhabitants at large,—except that several of the lower classes fell victims to their own folly in endeavouring to procure relief by making use of heated spirituous and malt liquors,—I was determined to seize such a favourable opportunity of acting the part of a mere spectator of the operation of nature; as I could act unrestrained by vulgar prejudices, where the patients had no idea that the physician did nothing for them if he did not drench their stomachs with nauseous medicines, I believe too often the case in general practice. And to my entire satisfaction, I found that warm, diluting, subacid drink, *nothing more than scalded buttermilk*, and confinement to

(*a*) Of Daniel Rainey we have not been able to collect much information; but he communicated several interesting papers to the Medico-Philosophical Society, some of which will appear in our future Numbers. He was not connected with the College of Physicians.

bed, brought the whole number through the complaint, without either the aid of medicine or even the lancet, and yet not one fell a sacrifice. In the Infirmary, which is set apart from the other buildings, in which was contained above fifty-one patients, medical and surgical, with several under a course of mercury, not one was affected, owing, as I at first supposed, to their living in smaller apartments, well warmed, and being unable to go about in the open air, but even this exemption could not be relied on as the cause of their escaping, when I observed that several occupied in the necessary business of the house, and through the whole day exposed to the action of the air, yet never were attacked with any of the symptoms. Nay, so healthy in other respects were the poor at this period, that the Governors bore testimony in the public papers that fewer died during the prevalence of this disorder than during the same space of time since the opening of the house. Some had it so very slightly,—nothing more than a sort of languor, with a trifling tickling cough,—that it was scarce necessary to confine them; others more severely, as with lassitude, and, as they called it, pain through their bones, very severe cough, headach, and running from the eyes. Those who were subject to the tussis senilis did not appear to suffer more than any of the rest.

A Case of Osteosarcoma of the superior Maxilla. With Illustrations.

By David Macbride, M. D.

[Communicated to the Medico-Philosophical Society, March, 1777.]

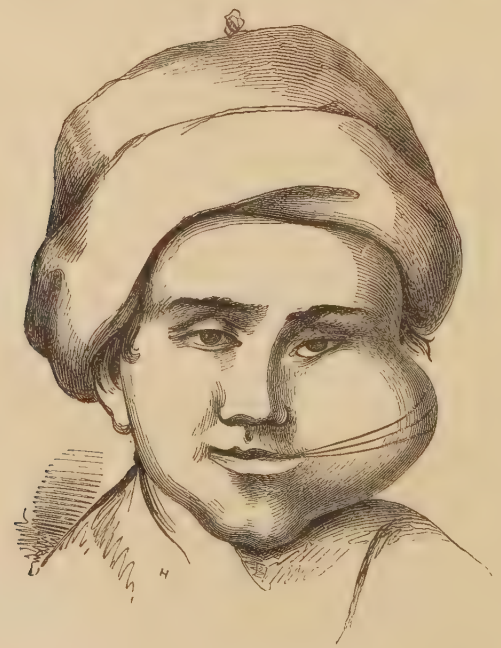
Some days ago, in looking over some old papers, I chanced to meet with a few memorandums of a very remarkable case, which some of the present company may remember, and which is very well worth the preserving, for when a case is not only distinguished by uncommon circumstances of distress and danger, but also remarkable for the success with which it was treated, it has a double claim to our attention. In all these respects there will seldom be found one more deserving of being recorded than that of Mr. Wm. Dixon, an eminent notary public of this city, whose life was prolonged by a repetition of one of the most hazardous and severest operations in the annals of surgery.

Mr. Dixon was a middle-sized, thin man, who had all his lifetime enjoyed good health, until October, 1757, when he perceived his left cheek gradually swelling, though without any pain. It was not long before he perceived the swelling, not only to push out the cheek, but also to force down the arch of the palate. He tried a variety of applications, and consulted different gentlemen of eminence in the profession, but all without the least advantage, for, in spite of every thing that could be devised, the tumour went on in-

(*a*) For a memoir of Dr. Macbride see our sixth Number. The accompanying engravings are fac-similes of drawings made by Macbride.

creasing, both externally, so as almost to close up the left eye, and internally, so as to render swallowing extremely difficult. By the beginning of the year 1760 it had grown so large, and had pushed so far down into the fauces, that he could swallow no solid food, and even liquids could not be got down without the greatest difficulty, and in very small quantities, so that it became evident he must speedily perish, merely from want of food, if this obstacle to deglutition could not be removed.

Joined to all this distress, the tumour had also been of late subject to large bleedings, and one day in January some of the vessels burst in the fauces, and discharged near a quart of blood. In every other respect this poor man was in perfect health, and, having sufficient steadiness of mind to undergo any operation, he was exceedingly urgent to have one attempted for his relief. After several consultations with the most skilful and dexterous surgeons then in practice, it was determined to hazard an operation, and Mr. Boat, who was one of the boldest of his day, undertook to perform it, assisted by Messrs. Daunt and Cleghorn. The sketches which I now present you, and which I took from the life some years afterwards,



will give you an idea, not only of the tumour, but likewise of the operation. The operation was performed March 18, 1760; it was begun by slitting open the cheek from the corner of the mouth on

towards the ear, so far, that when the cheek was laid open the operator could conveniently come at the tumour to dissect it away. What vessels required tying were taken up, and then as much of the tumour cut away as left the eye perfectly undisturbed.

It was found of such a hard substance that they were obliged to use a strong pair of cutting forceps before they could get enough of it removed to leave the passage to the fauces sufficiently free; and lastly, the actual cautery was applied, not only to destroy as much as possible of the tumour, but with the hopes of preventing its future growth. He stood this amazingly severe operation with the greatest fortitude, and recovered in a very short space of time, but unfortunately not many weeks elapsed before he perceived the tumour again beginning to form itself. It went on increasing, so as to lay him under the necessity of having it cut a second time; and in the same way, by the same surgeons, on the 12th May, 1761. He recovered that operation as he did before, but in two years more it required to be cut a third time, on the 22nd of September, 1763.

After this he had almost three years' respite, but there was no possibility of preventing its always sprouting up; and accordingly he was obliged to submit to a fourth repetition of this severe operation, which was performed by Dr. Cleghorn, on the 26th of May, 1766, his friend Boat and he having had some falling out. I was

present at this last cutting, and it was immediately before the operation that I made the sketch which is annexed. He stood this, as he had done the three former cuttings, with amazing fortitude, and the wound healed up in the usual time. But very soon after this last operation his general health began to decline, and he fell into a jaundice, which ended in a dropsy, putting an end to all his sufferings on the 16th of August following.

Cases of Hydrocele and Ascites, treated by Acupuncture. By T. Purefoy, M. D., &c., Cloughjordan.

Case I.—A healthy boy, aged nine years, had been affected with hydrocele of the tunica vaginalis testis of the right side, for a period of twelve months. During this period both mercury and iodine were used for some time as local and constitutional remedies, but without any good effect, the tumour continuing about the size of a hen's egg on the day when acupuncture was employed. Several punctures were made at intervals of two or three days, with a small needle, care being taken to make tense the coverings of the testis before introducing the instrument. Only one or two punctures were made at each operation. A small jet of transparent serous fluid followed the first punctures which were made; subsequently only a small quantity of fluid trickled from each wound.

This treatment having been continued for three weeks, without the aid of any other remedial means, the use of the needle was discontinued, and absorption went on so rapidly that at the end of three weeks no trace whatever of the disease could be detected.

Case II.—An infant aged eighteen months, who had suffered under the same form of disease for two months, made an equally rapid recovery by the use of the same remedial means.

Case III.—A boy, aged thirteen years, of strumous habit, and very delicate health, experienced the most decided relief of all his distressing symptoms,—arising from extreme distension of the abdomen,—by the use of acupuncture. He had been ill for several months, labouring under chronic dropsy, with enlarged liver, and subacute inflammation of the bowels. Alterative doses of mercury, with counter-irritation following the use of the needle, and a well regulated diet, effected the discharge of the accumulated fluid, partly through the punctures and in part through the medium of absorption, so completely, that the remaining enlargement of the abdomen was only such as arose from the laxity of the abdominal parietes and the increased size of the liver.

A very considerable discharge of fluid came away upon the first introduction of the needle; this was followed by general anasarca, but in a little time the discharge became much less, and absorption of the fluid within the peritonæum went on rapidly.

Case IV.—In an aged gentleman labouring under chronic stricture and hydrocele, I tried one puncture with a glover's needle for the relief of the hydrocele; from the wound there flowed merely a few drops of

fluid, but on the next morning the penis and scrotum were œdematous, and the prepuce greatly swollen and enlarged, the œdema being evidently occasioned by the extravasation of the fluid of the hydrocele into the neighbouring cellular tissue. The hydrocele completely disappeared, leaving merely the enlargement occasioned by the thickening of the tunica vaginalis testis, as the disease had been of long standing. As might be anticipated, the cure in this case was not complete; but the use of the needle was quite sufficient at any time to give exit to the accumulated fluid, and thus to afford, if not permanent, at least complete relief until the fluid had again collected.

It appears from the result of these cases, that when acupuncture is employed for the cure or relief of either hydrocele or ascites, the serous fluid, in part only, escapes by the punctures made with the needle; and that the greater portion becomes extravasated into the cellular tissue, from which it is subsequently absorbed, and, perhaps, then eliminated by the kidneys. Acupuncture proved a valuable auxiliary remedy in these cases, and, where it could not be expected to cure, it did not fail to relieve. In the recent uncomplicated cases of hydrocele, occurring in infancy, this remedy alone effected a complete cure, as the boy first mentioned remained perfectly free from the disease for many years after its removal. In the cases of chronic ascites and hydrocele, acupuncture afforded much temporary relief, and also assisted the favourable operation of the other remedies employed.

Case of Anchylosis of the second and third Molar Teeth at a right Angle. With an Illustration. By W. Grimshaw, F. R. C. S., Dentist.

The accompanying illustration exhibits a molar tooth which I extracted from the upper jaw of a lady about sixty years of age, who applied to me about two months ago, in order to have it removed. Upon attempting to bring it away I experienced a great deal of difficulty, so much so, that I felt persuaded that there was something very unusual connected with it. During the effort at extraction, the entire maxillary bone appeared to shake under the forceps. However, by proceeding with the operation in a very cautious manner, I gradually succeeded in removing the tooth. Upon examining it, I found that it had been anchylosed at the roots with another tooth, the dens sapientiæ of the left side, which joined it at a right angle, and created the difficulty attendant on its removal. In the course of my experience I have not met with an exactly similar specimen, nor have I read any description of such an occurrence in books on dental surgery, although I have frequently seen teeth joined together at their sides; it is not very uncommon to meet with primary teeth thus united.

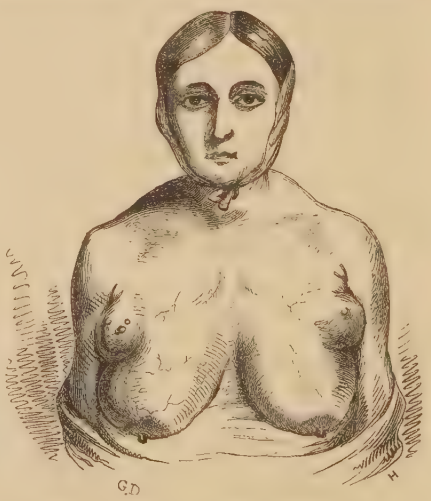
Case of quadruple Mammæ. With an Illustration. By P. Shannon, F. R. C. S., Surgeon to the South Dublin Union Workhouse.

Examples of quadruple mammæ in the human female are so uncommon that the following well-marked instance of this anomaly, which was recently under my observation, may possibly prove of some interest to the profession.

Anne Merriman, aged thirty-four years, was delivered of her sixth child in the month of August last, being at the time an inmate of the South Dublin Union Workhouse.

Soon after her accouchement the attendant informed me that this woman had four breasts, and that they all contained milk in abundance. On inquiry the nurse's statement turned out to be perfectly true, and I immediately procured by Mr. Neilan a full-sized drawing, from which the accompanying illustration has been reduced.

The supernumerary breasts are placed one at either side, above the ordinary situation of the mammary glands, and very near the margin of the axillæ. Each of them envelopes, and in a great measure obscures, the prominent fold formed by the free margin of the pectoralis major muscle. When distended they are each of a spherical shape, and of the dimensions of a large goose egg, being equal to about one-sixth of the size of the true breast, which, in this woman, is largely developed. Their position also is such, that when loaded with milk they interfere considerably with the motions of the arms. On the left side the supernumerary gland is provided with a single nipple, whilst that on the right side possesses two. These resemble in all respects (except in size) the corresponding parts of the true breasts, and are, to all appearance, identical in structure with the true nipples. The lacteal secretion flows abundantly from them when they are squeezed. When the draught commences in the larger breasts the supernumerary glands are also distended; and when the child is applied to either of the true nipples, the milk flows freely from the nipples of the smaller breasts, saturating the woman's dress, and thus occasioning her great inconvenience. A mole upon the right supernumerary breast gives, in the illustration, an appearance of a third nipple.



All the nipples are surrounded by well-marked areolæ, but those of the true breasts are of a much darker tint than the others.

From some superstitious feeling this woman could never be prevailed upon to nurse any of her infants at the smaller breasts, though from the preceding details it may be fairly inferred that they would have afforded a considerable amount of nutriment.

Anne Merriman was the daughter of a small farmer in the county of Kildare. None of her relatives had ever presented any anomalous condition of the mammæ : of this she is positively certain, for the most anxious inquiries were instituted on the subject by herself. She never had more than one child at a birth; all her labours were natural; and the generative organs, so far as can be ascertained by a vaginal examination, are perfectly normal.

She says the supernumerary breasts were first discovered about the period of puberty, and that they have always enlarged in proportion to the true breasts during pregnancy and lactation. When the process of nursing is discontinued they speedily diminish in size, and produce little or no inconvenience in their flaccid condition.

In the human mammæ anomalies as to number are of comparatively rare occurrence, nevertheless instances sufficiently numerous to attract the attention of medical men have from time to time been observed. It has been remarked that in the majority of such cases there is a redundancy of development,—three, four, and even five breasts having been sometimes noted, whilst examples of their total absence, or of a solitary mammary gland, are much more uncommon. Geoffroy Saint-Hilaire has explained this ingeniously by shewing that a numerical increase of the glands in question is but a repetition of one of the most general characters of the great class mammalia.

In the *Dictionnaire des Sciences Medicales*, article "Multimamme," we read of a rich heiress who had four breasts, and who for many years refused to marry lest she should produce four children at every birth! Being assured, however, by the most eminent of the faculty, that her fears were groundless, she was at length prevailed upon to change her state, and she had afterwards the gratification to find herself strictly uniparous. The subject of the present communication had no such apprehensions, being, like most of her countrywomen, free from the prejudice against a numerous offspring which prevails so generally in French society.

A case very similar to the above is reported by Dr. Robert Lee in the Medico-Chirurgical Transactions, vol. iii. Second Series; it is afterwards quoted by Sir Astley Cooper in his work on the breast, but, with this exception, I have been unable to find in the English periodicals or standard works any example of the malformation in question.

[We have just been informed by Dr. Santisson of Stockholm, that an instance of four mammary glands in the *male* was seen in Sweden some years ago, and that an account of it has been published in the Proceedings of the Swedish Medical Society.—Ed.]

Some Cases illustrative of the alkaline Treatment of Dysentery. By D. Kelly, L. A., Mullingar.

Acute Dysentery ; Alkaline Treatment ; Cure.—February 11th, 1847. William Reeves, aged 28, was suddenly seized, at 2; A. M., with violent tormina, tenesmus, and purging, which was preceded for a few days by diarrhœa, but to which he paid no attention.

When first seen, at 9, A. M., he was labouring under constant retchings; the ejections whitish ropy mucus; violent purging, dejections frequent, bloody, serous, and colliquative, flowing from him, but not unconsciously, each motion being preceded by a feeling of sinking, and most excruciating pain in the region of the colon; constant thirst, cold tongue, and extremities; extreme prostration; dorsal decubitus; no cramps; intellect unimpaired; gargouillement in right iliac region. A starch enema, with one drachm of tincture of opium, was administered; turpentine stupes applied to the lower part of the abdomen; thirty minims tincture of opium given in a draught; and jars of hot water applied to the upper and lower extremities.

1 P. M.—The lavement came away almost immediately, accompanied by a copious sero-sanguineous motion, mixed with coagula, five of which he has had since the morning visit. Ten minims of liquor potassæ and five of tincture of opium, were given every second hour; to continue the turpentine stupes; barley or rice water for drink; and a spoonful of brandy and water every hour.

8 P. M.—Has been comparatively easy since the commencement of the alkaline treatment; had but two motions since last visit; tormina and tenesmus so considerably abated that he has scarcely remarked their occurrence.

There being some abdominal fulness, with just perceptible tympanites, I gave, at bed-time, one grain of opium, one grain hippo, ten grains hyd. c. cretâ, and ten of dried soda.

12th.—Passed rather a favourable night; about 5 A. M. had two brownish, bilious-looking feculent motions, extremely fetid, and, presenting scarcely any trace of the dysenteric character. To continue the medicine, increasing the interval to four hours, and have two or three spoonfuls of rice jelly every hour.

13th.—Had a very good night, slept quietly, and awoke refreshed; no gargouillement or soreness on pressure; bowels opened but once since morning; dejections more consistent and natural; pulse full and soft; omit medicine, and continue rice regimen.

14th.—Convalescing rapidly, and sitting up.

16th.—Convalescent.

The feature of most importance in this case was the almost magical effect of the alkali in allaying the tormina, tenesmus, and purging, the tincture of opium appearing to exert no influence whatever over the disease till combined with the liquor potassæ; the patient remarking, when I visited him in the evening, that the last medicine produced a feeling of ease and rest from pain quite cheering to him.

Acute Dysentery, of a Fortnight's Duration; Dysuria, Œdema, and tendency to general Anasarca; Alkaline Treatment; Cure.—February 28. Being called suddenly to see a carpenter named Patrick Oulaghan, aged about 70, who, I was told, had fallen down in a fit, and was dying, I found on my first visit that he had been labouring under dysentery of a fortnight's duration, and that, having got up for a motion, he had fallen through debility. He then presented the following symptoms: appearance dusky and collapsed; tongue cold; eyes drawn in, shining, and surrounded by leaden-coloured areolæ; voice low and whispering; pulse almost imperceptible; intense thirst; extremities cold and œdematous; dysuria; tormina, tenesmus, and almost incessant purging; dejections scanty, muco-sanguineous, with glairy, yellow deposit, as if the process for the production of plastic lymph had been arrested through debility, and a gelatino-albuminous secretion, coloured by cholesterine, was the result; iliac gurgle, and soreness on pressure; abdomen slightly collapsed. Ten minims of liquor potassæ and five of tinct. of opium were given every second hour; a mustard poultice applied to the abdomen three times a day; rice regimen and brandy and water. Slight improvement in the evening.

March 2. Much improved to-day; had but four pinkish, flocculent, fibrinous evacuations, with just perceptible yellowish tinge, since yesterday; strength much improved; œdema on the increase; dysuria less. Continue the medicine, but with four hours' intervals.

5th. Had ten or twelve muco-feculent motions, with scybala, tormina, and tenesmus, during the night, in consequence of having regaled himself with sweet cake and tea in the evening. A draught of castor oil and tincture of rhubarb given; other medicines continued.

8th. Convalescing most favourably, had but two feculent, brownish, consistent motions during the day; œdema of feet and legs still continues, with anasarcous tendency. Omit medicines; four ounces of broiled meat for dinner, and a glass of porter twice a day.

12th. Anasarca and œdema gradually disappearing under influence of good nourishment.

20th. Convalescent; œdema and anasarca have disappeared; and, on the whole, he appears much stouter and in better condition than he had been for years before.

In this case, also, the alkaline treatment was most satisfactory, checking almost at once the purging, tormina, and tenesmus, which it appeared to keep in complete subjection, till reinduced by an error in regimen, which, in its turn, promptly yielded to an aperient and a continuance of the alkaline treatment.

Viewing dysentery under the phase of increased acidity in the whole tract of the alimentary canal, which, to a certain extent, is proved by the fact of the dejections at once developing an exalted acid reaction on the application of the litmus test, and being originally led into this train of thought from observing the highly acid state of the motions in the bowel complaints of children, analogy

prompted me to adopt a treatment calculated to counteract and neutralize, if possible, that peculiar tendency, by exhibiting, in combination with alkalies, a regimen which should be as free as possible from acescence.

Scybala, which are considered by most authors as one of the pathognomonic symptoms of the disease, I certainly never saw passed, that their presence could not be clearly traced to errors in diet. Considering them, therefore, as an accidental and not a constant symptom, and supposing their presence to be invariably dependent on errors in diet, it follows as a corollary to that hypothesis, that in the choice of solids all substances having a tendency to leave too great a residuum in the bowels should be avoided.

In pursuance of these views, rice-jelly, prepared by boiling equal quantities of rice and fowl, or beef, into a jelly, removing the meat, and flavouring with salt, pepper, or any spice, according to the taste of the individual, should form the solid dysenteric regimen.

With reference to fluids, the drinks should be of as inascessant a character as possible, viz., rice water, barley water, thin arrow root, toast and water, or plain water, with brandy or whiskey and water for a stimulant when such is required.

Beer, wine, ale, or any fluid containing much sugar, in consequence of their great tendency to acescence, are, therefore, contra-indicated; and milk, so universally used in these diseases, is, I think, even more objectionable still, for directly it is received into the stomach it is at once converted into a highly acid whey, and tough, indigestible curd, the first increasing the hypercatharsis already in existence, and the latter, by accumulating in scybala, producing the most excruciating tormina and tenesmus for their expulsion.

In conclusion, I wish it to be distinctly understood that I do not pretend to assert that the alkaline treatment will prove effectual in every case of dysentery; my only object in putting forward the above cases being merely to draw the attention of the profession to the subject, now that the disease is again likely to become rife, that so they may give it a fair trial, and thus impartially judge for themselves.

Notes of a Case of Bronchial Fistula; from the Clinique of Professor Chomel, at the Hotel Dieu, Paris. By Maurice H. Collis, L. R. C. S.

Examination.—N. M., aged 23, a discharged soldier, pale and emaciated, especially in the upper extremities; the lower were infiltrated with serum; pulse 96; cough troublesome, accompanied with a viscid sputa in opake masses (at times fetid), floating in abundance of mucus. In the interscapular region, to the right of the spine, are found four round marks, red and raised, such as a cupping-glass would make. The two best-marked of these present fistulous perforations; the upper and larger (about three and a half inches in diameter) gives constant exit to pus of sufficiently healthy appear-

ance, and generally devoid of smell; at intervals, however, it is fetid. The discharge is mingled with air bubbles on forced expiration being made by the patient, or by pressure on the external tumour by the examiner. Such pressure gives the sound of gargouillement in the thorax. From the other fistulous orifice pus of a less healthy character is discharged, being thin and fetid; the quantity less, and the escape of air not so well marked. The right side of the thorax appears considerably larger than the left. Percussion gives a complete dulness laterally and posteriorly for two-thirds of its extent; clear over the tumours; over the dull portion respiratory murmur inaudible, faint, mixed with râles, and a few fine bubbles over the rest of the right lung; over the left puerile, with râles. Heart normal in position and sound, except an obscure *bruit de soufflet* with the first sound; there is also a well-marked murmur in the jugulars. Appetite good; no diarrhœa; moderate night sweats; bad sleep, from constant cough.

History.—He states that from his childhood he has been subject to a cough every winter, with expectoration, but never of blood. It does not appear that either he, or any of his family, have shewn signs of any scrofulous affection. He enlisted two years and a half back; six months after he was in hospital for what was called a typhoid fever, during the progress of which he lost flesh, was discharged as cured, did not regain his former good condition, and was annoyed by a severe cough, without expectoration. Three weeks after his leaving hospital, he experienced severe pains all around the base of the right lung; his complaints, however, were disregarded, and he was compelled to return to his duty, and mount guard at night; and the next week he had a five days' march, at the end of which he was much exhausted, but still was not attended to for some days. When at last examined, a fluctuating tumour, about three or four inches in diameter, was found in the right interscapular space. This was set down as a muscular abscess, and was opened with a lancet, when about a pint of pus escaped. After discharging some time it closed, and another formed in the neighbourhood, which was similarly treated, and with a similar result; and so, four abscesses were opened, the two latest of which have never closed, but give constant issue to pus, as already stated. After a time he was discharged from hospital and the service, and was admitted into the *Hôtel Dieu*, in the month of September last.

Diagnosis made Dec. 9.—1. It is more than probable that what was called typhoid fever was neither more nor less than the febrile symptoms accompanying the formation of a purulent effusion in the pleura, the existence of which, the enlargement, dulness, gargouillement, and escape of pus, &c., leave no room to doubt. The severe pain felt three weeks after hardly militates against this opinion, as this may easily be attributed to increase in the violence of the affection, consequent on neglect. We may, therefore, diagnose pleuritis with effusion of two years' standing, causing pressure on the inferior cava, and producing œdema of the lower extremities.

2. Equally easy is the diagnosis of fistulæ, communicating with the upper part of the sac and the bronchi on one hand, and with the sac and atmosphere, between the third and fourth and fourth and fifth ribs, on the other; but here are one or two points to be noted:—whence comes the fetid pus which flows almost constantly from the lower orifice, and occasionally from the upper. Is it from a carious rib or vertebra?—Perhaps so. If not how can we account for the two persistent fistulæ? The case is not rare. M. Chomel gave a case of a man who had a fistula opening externally, and another through the diaphragm into the stomach, giving rise to frequent vomitings of pus; and remarked that here the expectoration is fetid, that there are mucous râles in the summit of the right lung, and joining this to the fact of a communication existing *through the sac*, between the bronchi and atmosphere, we come to the conclusion :—

3. That there are softened tubercles in both lungs, especially the right, and a tuberculous cavity in the centre of the right lung.

4. That there may, perhaps, be caries of a rib also; but the signs are not positive.

We seem, then, to have to do with a case of subacute pleurisy, which has given rise to a copious pleural effusion, and fistulous communications with the atmosphere and bronchi, together with more recent tubercles and cavities, and perhaps caries of the rib, &c. (I should have stated that one of the gentlemen present was of opinion that a carious abscess had been the primary affection, and that this had opened first into the pleura, and then come back again through the integuments. Were this the case, we should have had violent pleural inflammation on the bursting of the carious abscess into the pleura.)

Prognosis.—Grave, from the complication of tubercle; he has no diarrhœa, and his night sweats are moderate; yet, still, the constant drain, by means of the purulent secretion, will have the same effect; his sleep is broken by the cough; the most favourable point is his good appetite.

Treatment.—Good, nourishing diet. Bark and other tonics; iron for the impoverished state of his blood (evidenced by the venous murmur, bruit, œdema, &c.) ; opium, of which he takes seven grains *per diem*, less having no effect. Frictions of very mild iodine ointment, more for the purpose of keeping up his confidence than in the hope of benefitting him therapeutically, were employed.

Death.—The prognosis was too true, as the man sunk on the night of the 13th December.

Autopsy, 14th.—An immense sac at the base of the lungs ; its boundaries, the lung above, reduced to one-third its proper bulk; the ribs and vertebræ at the sides; the diaphragm below, lined with thick and dense false membranes; the base of the lung so fixed as to be incapable of pressing on the sac when filled (hence the air and pus escaped during *expiration* only, from the pressure of the ribs). Several openings into the bronchi. The trajet of the two external fistulæ was,—the upper directly backwards between the third and fourth ribs into the sac; the lower very obliquely downwards through

the dorsal mass of muscles, and between the fifth and sixth ribs, into the sac also. No direct communication of either with the bronchi could be made out, but that it did not exist I cannot state positively, as the autopsy had not been conducted very carefully as far as the removal of the parts was concerned. An irregular cavity of the size of a large nut, which communicated with the sac, was found in the centre of the right lung. Tubercle in the softened stage existed abundantly in the right lung, and in a less degree in the left. The bronchi were thickened to obliteration in some parts. Pneumonia of the third stage in the base of the lung. No caries could be detected.

The only point not cleared up by this autopsy was the special fetor of the discharge from the lower orifice: whether it arose from the lengthened course of this fistula, or from any special communication between it and the small tuberculous cavity, is a doubtful point. I incline to the former opinion; for we sometime see long fistulæ producing fetid pus, and the lung did not seem to reach so low as the internal orifice of the fistula.

Case of Traumatic Tetanus cured by Donovan's Tincture of the Resin of Indian Hemp. By Matthew Mac Garvey, Surgeon, Borrisokane.

Daniel Whelan, aged 23, a slater by trade, slightly made, of temperate habits, states that three weeks since he received a slight wound by a reaping-hook in the first joint of the two forefingers of the right hand; this he dressed with some quack preparation without any apprehension of danger for seventeen days. He then felt a stiffness in his neck, which soon extended to the extremities and body, with an occasional acute pain in the epigastric region, and passing through to the back; and the muscles of his jaws became tense. These symptoms gradually increased in severity until the twenty-first day, when I visited him. He was then labouring under opisthotonos; the body arched, and resting on the occiput and heels; jaws clenched, palpebræ in constant motion, and the abdominal parietes as hard as a board. The paroxysms were both frequent and severe, and were each from six to eight minutes' duration, followed by an intermission of about fourteen minutes. The wounded fingers were in a sloughing state, accompanied with a sanious discharge of a most offensive nature. It was now 7 o'clock, P.M. The tetanic expression of face, and the rigidity of muscle of the whole body, had considerably increased since morning. This I considered a good opportunity for testing the efficacy of Indian hemp in the treatment of tetanus, and twenty-five drops were given immediately.

8 o'Clock. He had three paroxysms during the last hour. The draught was repeated.

9 o'Clock. Had three returns of spasm, but not so severe. The dose was increased to thirty drops.

10 o'Clock. Had only two paroxysms. The medicine continued.

12 o'Clock. Slept for one hour and a half; only one return of the fits. The dose decreased to twenty-five drops; to be given now every two hours, except during sleep.

12th Sept., 1847. The report is, that he passed a good night; had no return of the paroxysms; rigidity considerably lessened; can introduce his forefinger between his teeth. Ordered beef-tea. Pulse natural; bowels were constipated, for which an enema, containing castor oil, turpentine, and assafœtida, was administered; this brought away a great quantity of dark-coloured fæcal matter.

Barm and linseed-meal poultices were applied to the fingers until the sloughs were detached.

13th. Had a good night, with the exception of one hour, having caught his tongue between his teeth, which caused great excitement for a short time, but is now free from pain or uneasiness.

14th. Passed a good night; had no return of the former symptoms. Bowels moved by broth injections. The body has assumed its natural appearance, and he can use the limbs with perfect freedom. The drops decreased to ten every fourth hour.

15th. Had a very good night. The fingers look much better, and the discharge has a healthy appearance. Verdigris ointment, one-half the usual strength, used for dressing the fingers. Secretions natural. All medicines omitted. Can get out of bed without any assistance.

22nd. Fingers healed; can masticate his food, and was this day able to walk into town, a distance of two miles.

Cases of Abscess of the Tibia. By Edward Hutton, M.D., M.R.I.A., Surgeon to the Richmond Hospital.

I. John Shelly, aged 20, was admitted into the Richmond Hospital on the 11th of February, 1847, on account of pain and swelling in the upper part of the right tibia. He stated that about a year previously he was kicked by a horse on this part, which did not then give him much trouble, but it remained sore on pressure; in July, 1846, it was again injured by a horse falling on it, and became more painful. A month afterwards he observed a swelling at the upper part of the leg, near the knee-joint, this then increased and extended gradually downwards, the pain became more severe, particularly at night, and prevented sleep. During the day he was sometimes free from it, but it recurred after exercise. He had no treatment until the end of December, 1846, when he applied a blister to the part; at this period the swelling had not extended further downwards than three inches, but after the application of the blister the pain was considerably aggravated, and the swelling gradually increased, until it reached to the middle of the bone. He suffered much from loss of rest, he lost flesh, and his general health became impaired. On his admission, the swelling occupied the upper half of the tibia, termi-

nating abruptly at the middle of this bone; the leg measured in circumference, at its largest part, two inches and a quarter more than the opposite limb, and he complained of deep-seated dull pain, confined to the part, aggravated by standing or walking, and increased at night. The knee-joint was unaffected. The treatment consisted of leeching, small blisters, mercury, and afterwards hydriodate of potash and sarsaparilla. On the 26th of February the pain was in some degree relieved, but not removed, the swelling was observed to increase in circumference, and his general health did not improve. Under these circumstances, believing the case to be an abscess of the tibia, I prepared to perforate the bone, and procured a drill for that purpose; but on the 2nd of March, a prominence suddenly appeared about the centre of the swelling, which presented fluctuation; it was immediately opened with a bistoury, and an ounce and a half of thick pus was discharged: a probe introduced into the wound entered without obstruction into a cavity in the bone, and passed both upwards and downwards to a considerable distance. The opening in the tibia admitted the end of the fourth finger, and had a defined edge; no sequestrum could be felt; the cavity appeared to be lined by a membrane which was extremely sensitive: the evacuation of the matter gave him great relief.

March 7th. He had no pain; pus was discharged from the opening, of good colour and in some quantity. The circumference of the limb was three quarters of an inch less than at the previous measurement. Near the tuberosity of the tibia, there was a part about the size of a shilling tender and yielding a little to pressure. On the 11th of March the discharge had diminished, some pain was again felt, and the circumference of the limb had increased about a quarter of an inch.

14th. The measurement had still further increased, and pressure on the tender spot caused pus to flow from the aperture below. In two or three days an opening was made here also, and a probe was introduced into the cavity already described. The discharge of matter from this opening quite relieved his pain. The swelling gradually declined, until the circumference of this limb was found to exceed that of the other by scarcely an inch. The discharge of matter now nearly ceased. On the 12th of April the upper, and on the 16th, the lower opening had healed; he walked without the least uneasiness, and left the hospital at this period.

In three months afterwards I inquired about him, and was informed that on his return home he very soon resumed his usual field labour, and the care of horses, and that he never suffered the least pain or inconvenience from his leg, but, on the contrary, was able for any exertion. He remained well eight months, when he again injured the leg with a stirrup-leather, and was re-admitted into hospital on the 20th of December, 1847, a fortnight after the pain and swelling had returned. Four days after his admission a fluctuating prominence occurred, as before, on the middle of the swollen part of the tibia, which being opened with a bistoury,

exit was given to a considerable quantity of matter, and by the introduction of a probe it was ascertained that the cavity in the tibia was of as great extent as before. A fortnight after the discharge of matter, it was ascertained by measurement that the general swelling of the leg had diminished in circumference three quarters of an inch.

January 12th, 1848. He is going on favourably; the secretion of pus is diminishing: he has no pain, and his general health is good.

II. John Donohue, a smith, aged 25, was admitted into the Richmond Hospital, on the 28th of April, 1847, with pain and enlargement of the lower part of the right tibia. At its largest part, it measured an inch and a half in circumference more than the other limb; the skin was of a light pink colour. He complained of intense pain occurring in sudden pangs along the leg and in the foot, and also of a more continued gnawing or boring pain, felt in the affected part, which was much aggravated at night, and entirely prevented sleep. In the day time he had intervals of comparative ease. He had lost flesh, and his general health was impaired.

He stated, that when three years old he met with an injury, in consequence of which he was some five or six years laid up, and a piece of bone, an inch long, was discharged through an opening, then situated at the upper part of the present swelling. This opening soon healed and all pain subsided; the swelling remaining. On two or three occasions since, pain returned in the swelling, but yielded to treatment. Five weeks ago he got the measles, and during convalescence from this disorder the pain suddenly returned whilst he was out walking. This continued violent, and the swelling increased. After his admission into hospital, the treatment consisted for some days of the repeated application of leeches, mercury to salivation, and anodynes, but no relief was obtained. The pain became extreme and constant; his countenance was expressive of great suffering; he could not bear the least touch on the swelling, which had increased in size, and the skin, though not adherent to the parts beneath, had a pink blush; the veins of the foot and ankle were distended.

May 7th. Nine days after his admission a free incision was made down to the bone, and an opening about a quarter of an inch in diameter was rapidly made by Mac Dowall's Archimedian drill into the cavity, from which two or three drachms of pus, of a brownish-yellow colour, welled up. He suffered considerably, having resisted the inhalation of ether; and after the operation he was affected with spasms of some of the muscles, and pains along the course of the nerves of the leg and thigh. These symptoms were, however, relieved by an opiate, and he improved very much, in every respect, during the next eight days. The circumference of the swelling had diminished to the extent of an inch; pus continued to flow from the opening, and he suffered very little from pain. On the tenth day from the operation, however, the pain again became severe, and the swelling increased, purulent matter continuing to flow; he had

rigors, followed by sweats and considerable increase of fever. In three days an abscess presented itself about an inch above the artificial opening; an incision being made into it, an ounce of pus escaped, and a probe introduced into the wound passed into the same cavity in the bone. After this he recovered gradually, the discharge diminishing, and the swelling subsiding to a certain extent. He was discharged in June, and soon after returned to his laborious employment. He has remained quite well up to the present time.

III. Cornelius Mulvhill, aged 65, was admitted into the Richmond Hospital on the 2nd of August, 1847, with an abscess in the lower extremity of the right tibia, and another in the upper part of the left. As far as could be collected from the very imperfect history which he gave of his disease, it appeared that in the year 1843 the lower extremity of the right tibia became the seat of severe pain, followed by swelling of rather a firm character; that after a short time he was admitted into an hospital, and from the treatment there employed obtained considerable relief; but that, not long after leaving the hospital, the local distress recurred with greater violence than before, and continued until a tolerably free opening formed spontaneously at the lower part of the swelling, and gave exit to a considerable quantity of matter, the escape of which was followed by a subsidence of his sufferings, although the swelling continued. A year and a half afterwards, the upper extremity of the left tibia became similarly affected; the bone gradually became enlarged, and he suffered from severe, deep-seated pain. After a time this also opened spontaneously, but he did not obtain the same relief as from this occurrence in the right tibia. On his admission into the hospital the lower extremity of the right tibia was enlarged; a fistulous opening, from which pus flowed, was observed a little above the inner malleolus, and with a probe a considerable cavity was found to exist in the bone, but he suffered little pain from it; the integuments were of the natural colour, and the swelling was stationary. At the upper part of the left leg the skin was of a dark-red colour, and slightly œdematous; the tibia was enlarged to the extent of about three inches; below its tubercle a small fistulous opening existed on the anterior surface, from which matter flowed, but sparingly; a probe introduced through this aperture passed directly into a cavity in the interior of the bone. The swelling occupied at first about a hand's breadth of the upper part of the tibia, but it gradually extended; the pain became more severe and constant, and the patient's rest at night was broken. The matter did not escape freely through the aperture which had formed spontaneously. Under these circumstances I determined to make another opening, which was readily effected by means of a drill. A quantity of matter immediately gushed forth, and the patient at once experienced relief. This aperture, however, closed very soon, and the urgent symptoms returned. The crown of a small trephine was then applied, but this instrument worked badly, in consequence of the very uneven surface of the bone; and I enlarged the spontaneous aperture with

a small chisel and mallet, and in this way succeeded in making a sufficiently free opening. The operation was followed by some inflammation of the periosteum and soft parts; but the severe pain produced by the confinement of matter was relieved. A remarkable pulsation was communicated to the fluid lying in the cavity of the abscess, the contents of which the patient could, by turning his leg round, discharge, upon which the pulsation ceased to be visible. A few small detached portions of the cancellated tissue of the bone were removed upon one or two occasions. The patient's health began to improve, he rested well, and his appetite and spirits were good. In this way he continued until the 20th of last December, when he got an attack of diarrhœa, and an unfavourable change suddenly took place in his general appearance; his spirits gave way, his appetite failed, and his pulse became scarcely perceptible. A few days before death, which occurred on the 27th of December, a remarkable puffy swelling appeared in the left parotid region.

Autopsy.—The swelling in the parotid region was found to consist of a sero-sanguineous fluid effused into the cellular tissue. On raising the sternum, it was found fractured, and a red sanies escaped from its cancellated structure. The upper portion of each lung was consolidated, and there were extensive adhesions of the pleura, but not of recent date. The heart and its valves were healthy, but the coronary arteries were converted into osseous tubes. A thin layer of extravasated blood was discovered beneath the fascia, covering the psoas muscle, and also external to the abdominal peritonæum. There was likewise an effusion, to a considerable amount, of synovial fluid into each knee-joint. Upon making a longitudinal section of the lower extremity of the right tibia, the cavity of the abscess was found to be three inches and a half in length, and lined with a smooth, organized membrane, of considerable thickness. Two small, detached pieces of bone lay within the cavity; around it the osseous structure was more dense than natural, and immediately above it the medullary canal was obstructed by deposition of bone. The abscess in the upper end of the left tibia presented nearly similar appearances; it contained loose portions of the cancellated structure of the bone, and its lining membrane was dark-coloured and vascular. The anterior and posterior tibial arteries of this limb were ossified, and in the vicinity of the abscess were fully twice as large as natural.

Remarks.—In the foregoing cases the abscesses were situated in the cancellated structure of the tibia, but in a case published by Mr. Adams, in Todd's Cyclopædia of Anatomy and Physiology(*a*), the abscess existed in the extremity of the femur. Sir Benjamin Brodie has found them most frequently in the tibia. It appears that although these abscesses occur for the most part at the ages of puberty and in early adult life, they may take place in earlier and in more advanced age.

From the history of some of the cases related, it appears probable

(*a*) Article, Knee-joint, abnormal Conditions of.

that inflammation of the cancellated structure may occur without terminating in suppuration.

When suppuration does ensue, a cavity is formed, lined by an organized membrane, containing purulent matter only, or the cavity may contain also small fragments of the cancellated structure of the bone.

In most cases the osseous walls of the cavity are rendered thicker and more dense by the deposition of bone both externally and interstitially; and the medullary canal is liable to be blocked up in the vicinity of the abscess; but where spontaneous openings occur, there the wall of the abscess is, of course, absorbed.

When an abscess of this nature discharges itself and the opening heals, it may be a question whether the cavity remains, secreting only fluid, which is again absorbed, or whether granulations arise from all parts of the surface of the sac, coalesce, and become ossified. From my observation of the cases of this disease in the living, and the examination of bones in museums, I am inclined to think that the former is the more frequent occurrence, but further observation is necessary.

It must be supposed that the considerable variations found to take place in the extent of the swelling at very short intervals of time, according as the matter is confined or gets exit, depend upon the condition of the external softer parts, whilst that firm swelling which slowly extends itself along the shaft of the bone must be regarded as depending upon the enlargement of this structure.

This *progressive* enlargement of the bone along its shaft supplies a valuable means of diagnosis, taken in connexion with the other signs mentioned by Sir Benjamin Brodie, viz., excessive pain, such as may be supposed to depend on extreme tension, aggravated at intervals, and not yielding to treatment, but, although from time to time remitting, or even intermitting, yet returning with greater aggravation, and attended with loss of rest, impaired health, &c.

In acute necrosis it usually happens that the periosteum at once inflames to the full extent to which this disease is about to affect the bone; but in abscess of the cancellated structure the swelling and pain occupy the extremity of the bone, and the periosteum is often not sensibly inflamed at first.

With respect to treatment, when the signs of an abscess are apparent, and the patient suffers much from the disease, nature sufficiently indicates the proper course. Spontaneous openings, when they happily occur, bring relief. The surgeon, then, should certainly hasten this consummation; and although in simple purulent abscesses small openings may suffice, yet it so often happens that fragments of bone are contained within them, that it would appear judicious to make a free opening, and to clear the cavity of all *debris*.

The probability of large articulations, in the vicinity of the abscesses, becoming implicated, either in consequence of the abscesses opening into them, or from the irritation excited by the contiguous disease, is well insisted upon by Sir Benjamin Brodie as an argu-

ment for promptly giving exit to the confined matter, and the practice is fully borne out by the success which has attended it.

On the Discovery of a new Fluid for preserving the Colour of pathological and anatomical Preparations. By M. H. Stapleton, M.D., F.R.C.S., M.R.I.A., Surgeon to Jervis-street Hospital.

Sir,—I beg leave to make known to the profession, through the pages of your Journal, the discovery of a solution, which I have employed during the last six years, for preserving pathological specimens. It possesses the important advantages of causing such preparations to retain their colour perfectly unchanged, and it does not harden the substance immersed in it. These two results are well instanced in several preparations in Jervis-street Hospital,—in particular preparations of the brain, shewing apoplectic clots; apoplexy of the lung, and the recent appearances in stricture of the urethra.

The process I adopt is simply as follows:—In a quart of a saturated solution of alum in water I dissolve half a drachm of nitre; in this fluid I immerse the recent preparation, which soon becomes decolourized, but the colour gradually returns within a few days, the period, however, varying in different preparations. When the colour is thus completely restored, I put up the preparation in a filtered saturated solution of alum. The specimens are open for inspection.

I remain your's, &c. &c.,
M. H. Stapleton.

16*th January*, 1848.
To the Editor of the Dublin Quarterly Journal.

OBITUARY.

While the famine and the pestilence, with their consequent commercial distress, and long train of horrors, form an epoch in the history of our country which never can be forgotten, the year 1847 has marked an era in the medical annals of Europe, which future historians will trace with wonder and dismay. Some of the most philanthropic spirits that ever graced an age have been suddenly quenched, while in the very exercise of their calling of charity. Men, the most eminent in the walks of their profession, who commanded the world's admiration, and attracted students from every quarter of the globe,—who advanced our science by the brilliancy of their talents, and captivated all who came within their reach by the kindness and generosity of their hearts,—have been snatched from us almost in an instant; and among our own countrymen, many friends and acquaintances, with whom we were in familiar intercourse, have been, within the last few months, removed to ano-

ther and a better world, where they will rest from their labours, and their works will follow them.

Liston, whose name will ever be venerated by the British surgeon, has been carried off by the sudden increase of a thoracic aneurism, when at the very pinnacle of his fame, and in the vigour of his manhood.

Deiffenbach, while surrounded by his class, and immediately after an operation in the theatre of his reputation at La Charitê, suddenly fell dead into the arms of a physician, who had come from a great distance to witness his surpassing powers. A letter lately transmitted from Berlin, contains the following graphic description of this remarkable man:

"I try to write, but my thoughts are wandering. I feel quite confused and shocked by the news of the day, that Dieffenbach is dead. I scarcely knew him or liked him personally, but he was a man of supereminent talent, in whom life and genius almost visibly sparkled. When I last saw him conversing with Leopold, the rest of the company seemed sleeping, cold, or dead, in comparison with those bright spirits; and now he is—I can hardly credit it—dead! He died with the knife in his hand, with which he had performed so many wonderful, almost miraculous, cures,—but which, owing to his brave assurance, had also sometimes dared impossibilities: surrounded by a class of students,—lecturing as he operated. The operation was completed in the moment when he was struck dead, —so suddenly was he seized with apoplexy. A clergyman who was sitting outside of the circle, waiting to be operated on, heard his voice one minute, then was surprised at seeing a sudden rush and confusion, and flannels and brushes brought in. He thought the operation had failed. The circle opened, and the corpse of Dieffenbach was laid on the sofa where he had been sitting! His death makes even more impression here than Felix Mendelssohn's. As a musician the latter was one of the few very prominent men in the world, but as a man among other men he took no lead. Dieffenbach, on the contrary, was a man of power,—he had a conquering aspect,—he enjoyed the world and subdued it;—there was something grand and almost savage in the character of his genius, which raised him above other men, and made most subservient to him. He seemed to feel he had the lives of others in his hands, and others felt it too; and the spirit of his life makes his death more impressive."(*a*)

For the obituary of our Irish brethren, during the last year, we can but refer to the long sad list of *one hundred and ninety-one* deaths, which now lie registered before us, which Drs. Cusack and Stokes placed at our disposal, for the purpose of being arranged in the form which they present at page 120, and which shall, we trust, produce, from the authorities under which we live, for the widows and orphans of these gentlemen, that meed of remuneration which

(*a*) We are indebted to Dr. Graves for the portion of the letter above quoted.

was denied to their own labours while living. Notwithstanding that few of these, our brethren, were known to fame as writers or authors, such as usually come within the province of the biographer, they were not the less beloved and valued in the districts where, late and early, they toiled, among poor and rich; nor are they the less mourned by those who knew their worth, or experienced their generosity. A few, however, claim our more particular notice.

MEMOIR OF VALENTINE FLOOD, M. D., F. R. C. S. I.

Prominently among the many voluntary victims offered by our profession, during the past year, to the Moloch of typhus contagion, stands the name of him to whose memory we offer the following imperfect tribute. When we hear of the early struggles of those few who finally have attained wealth and fame, we are apt to imagine to ourselves a something exhilirating and ennobling in the strife through which they have successfully forced their way, feeling a sympathy something akin with that with which we survey the strong swimmer buffeting the unruly waves, and at length in safety reaching the shore: and such a sympathy is, probably, instinctive, and wisely intended for our support, amid the thousand natural shocks that flesh is heir to. Yet this feeling does not prevent us from sorrowing over those who have fought bravely but unsuccessfully,—who have "waged with fortune an eternal war," and have been struck down amidst the conflict. The subject of this memoir, —an anatomist of singular merit, a well-known writer and teacher, and a highly-educated physician of excellent endowments,—met his fate while in attendance on the fever sheds of an obscure village.

Valentine Flood was the son of a barrister in Dublin. Having passed through the ordinary academical and collegiate courses, he became a graduate of our University. He served the apprenticeship, at that time necessary for becoming licensed by the Irish College of Surgeons, to Mr. Carmichael. In time he took out the letters testimonial of the Royal College of Surgeons, and, about the year 1828 or 1829, he was appointed Demonstrator of Anatomy in the School of Medicine connected with the Richmond Hospital. As to his character as an anatomist, we shall quote from a letter which we have received from one himself of no ordinary eminence, and who knew Dr. Flood intimately. "He was one of the most minute anatomists I ever knew: I do believe there were few in Europe who were so thoroughly acquainted with the anatomy of the human body as Valentine Flood. His knowledge of this most important science soon became known to the pupils whom he assisted in their dissections, and amongst them, in the capacity of Room Demonstrator, he maintained a very high character." As an anatomist, his reputation increased, and he was appointed a Lecturer on Anatomy in the Richmond School about the year 1831–32. For two or three seasons he gave his undivided atten-

tion to this branch of the profession, and became a favourite amongst the pupils, both as a lecturer and a private teacher.

As early as the year 1828 he published a work on the anatomy and physiology of the nervous system, which is not without merit; but it is evidently the performance of one who had not yet acquired a lucid and correct style, and it never gained any considerable celebrity. During his connexion with the Richmond School, he brought out a work on hernia, consisting of eight folio plates, drawn on stone by Mr. William Lover, from dissections and designs by himself. This book, considered as a compilation, has never, we believe, been excelled by any work upon the subject. In 1839 he published the treatise upon which his fame will chiefly rest; this is his Surgical Anatomy of the Arterial System, a work which is, upon the whole, one of the best and most thoroughly accurate in the English language. Whilst anatomy retains its rank amongst the sciences, this work upon the arteries will retain its character as one of the ablest contributions ever made to that science, either in this or in any other country.

The descriptive anatomy of the human body is so beaten a track that it is, in our days, extremely rare for one to find in it anything novel, or which has not previously been observed. We are not aware that Dr. Flood made, more than his contemporaries, any great discoveries. There is, however, attributed to him in the Dublin schools, and, we believe, justly, the discovery of an internal ligament in the shoulder-joint, synovial in its structure, and analogous to the *ligamentum teres* in the hip.

We have said that Flood was an anatomist, an admirable demonstrator, and that, as a private teacher, he commanded one of the best classes in Dublin; and had he continued these pursuits, for which he was so admirably adapted, it is tolerably certain that he would have ultimately arrived at whatever eminence and degree of remuneration this country holds out to such pursuits. But to be a good anatomical demonstrator, a profound chemist, or a great physiologist, is one thing; and to be adapted, both by natural and acquired gifts, for a practitioner in medicine and surgery, is another. There are, as our readers well know, many qualications besides medical knowledge, or even the application of that knowledge, necessary in order to gain the confidence of the public. A man may, moreover, at once exhibit such facility for teaching, and such knowledge of his subject, as to attract a class in a single season, but it generally requires long and arduous labour to become a successful practitioner.

This was the very rock on which, we believe, poor Flood split. He connected himself with one of our city dispensaries, about the year 1835, and laboured incessantly among the poor of the district in which he lived. His house was open to the distressed at all hours. The natural benevolence of his nature, added to the object he had in view, induced him to devote the greater portion of his time to visiting the sick poor, or relieving them at his own resi-

dence. To follow out his intention of becoming, by this means, introduced into general practice, his other pursuits, as a natural consequence, became neglected; students first complained, then rebelled, and finally deserted him. He lost position both as a lecturer and a private teacher, while profitable practice was still in prospective; and yet, all this time, a friend who knew him well writes to us to say, "he hunted out the poor with the most benevolent zeal and kindest sympathies, in the poorest and most miserable districts in our city. I have seen him often, in his own house, devoting his time and unceasing labours to the relief of poor patients, who consulted him at his residence. I never knew him to turn a deaf ear to suffering humanity; and I have frequently seen him give both medicines and money, to relieve and mitigate the disease and poverty under which so many of the wretched beings laboured who applied to him for assistance."

And this benevolent, disinterested, noble conduct, what did it lead to? The answer is, it led to the ruin of Dr. Flood. His time became absorbed by a pursuit for which he was not suited, and that did not return him a shilling; his other avocations were interfered with; his classes were deserted; and he had at length to leave Dublin, and to commence in another country the search after a fortune.

Dr. Flood went to London, and became connected with a medical school there (in Charlotte-street, we believe): but it is hard for a man who had worked and deserved as he did to commence life over again. It is said that his talents as an anatomist and physiologist were highly appreciated in England; but he did not succeed. His health became delicate, and, after much suffering both in mind and body, he returned during the last year to this country. He then obtained one of the appointments afforded by the Board of Health, to some fever sheds at Tubrid, in the county Tipperary, and there contracted the epidemic typhus, and perished.

On his tomb stands the following inscription: "This stone has been placed here by the clergy of both denominations, and the principal members of the Relief Committee at Tubrid, with a few other friends, as a memorial of their gratitude for the invaluable professional services, and their respect for the memory, of Valentine Flood, Esq., M. D., M. R. I. A., Physician to the Tubrid Hospital, who died of fever caught in the faithful discharge of his dangerous duties in that establishment, and whose mortal remains are buried underneath. Ob. 18th Oct., 1847."

We shall conclude with an enumeration of his works.

The Anatomy and Physiology of the Nervous System. Dublin, Hodges and Smith. 1828. 8vo. 1 vol. pp. 314.

The Anatomy and Surgery of Femoral and Inguinal Hernia. Illustrated with eight folio Plates, drawn on Stone by Mr. W. Lover, from Dissections and Designs by Dr. Flood. London, Sherwood and Co. 1843. Fol. pp. 13.

The surgical Anatomy of the Arteries, and descriptive Anatomy

of the Heart, together with the Physiology of the Circulation in Man and inferior Animals. 12mo. London, Highley. Dublin, Fannin and Co. 1839.

We think this a fitting time and place to make a few observations on some matters connected with the present state of the profession in Ireland.

From the foregoing detail, the announcement that Dr. Flood left his family totally unprovided for will not startle the reader. In this predicament the family of Dr. Flood form but an insignificant item among that mourning group of the widows and orphans of medical men who have been left almost homeless and penniless by the ravages of the last year. Some influential individuals have, however, generously come forward in behalf of the families of one or two sufferers, Dr. Valentine Flood and Dr. Goodison in particular. We wish God-speed to those who have applied their energies to this good work, but we confess that we should like to see these influential gentlemen heading and leading a *general subscription* for the widows and orphans who have been left unprovided for; not merely of two of their apprentices, but of *all* the medical men who have fallen victims in the discharge of their public duties during the last two years in Ireland. We are glad to state that the Government have offered to double the amount of whatever is subscribed for the families of these two medical men ; and we cannot suppose that so gross an injustice could be done by a British minister as to withhold a similar boon in every case where a subscription was set on foot. In the case of our late esteemed friend, Mr. James Walker, of Manchester, who died in the early part of last year, of fever contracted in the discharge of public medical duties, the Government has granted a gratuity of £70. The same announcement states that "Government has also granted similar gratuities in some cases at Liverpool and Chester." This is as it should be : the widow and the orphan of the civil physician or surgeon who is stricken down by contagion caught in his attendance upon the poor, surely deserve a gratuity or a pension as well as of those who have perished in the army or navy medical service. But what gratuities or what pensions have, with the exception of the two cases already alluded to (and in these it was only granted at the intercession of peculiar influences, and as the result of a bargain that the Irish public should subscribe a moiety), been granted to the families of the one hundred and fifty-three Irish medical practitioners who have died of fever within the last two years? We believe nothing. Not so the benevolent British public. His Grace the Archbishop of Dublin having received a large sum of money from the London Ladies' Relief Association for Ireland, placed at the disposal of a committee of medical men of this city the sum of £500, which has been distributed among twenty-three cases,—"but what is this among so many ?"

We know of no more appropriate place in our Periodical than this

for inserting the following, which we have received from the Secretaries:

"REPORT OF THE MEDICAL TEMPORARY RELIEF COMMITTEE.

Sir Henry Marsh, Bart.	Dr. Stokes.
J. W. Cusack, Esq.	W. R. Wilde, Esq.
Dr. Graves.	Dr. Croker, Dr. Benson, *Secretaries.*

"This Committee having, at the suggestion of his Grace the Archbishop of Dublin, been intrusted by the Committee of the Ladies' Relief Association for Ireland, with the sum of £500, for distribution amongst the families of distressed medical men, beg leave to lay the following details before the Committee of the Ladies' Association.

"The Medical Committee were instructed to expend this sum in 'meeting the present wants of the widows and orphans of those medical practitioners who have fallen victims, or who shall hereafter fall victims to the prevailing sickness, or to the pressure of fatigue and anxiety in the discharge of their onerous duties; or of such medical men as are disabled, by these causes, from the support of their families.'

"For the purpose of ascertaining the proper objects for relief under the foregoing conditions, a circular letter was sent to the principal medical men in every town in Ireland, requesting them to state confidentially to the Committee, the names, ages, and circumstances of any practitioners who suffered from fever in their neighbourhood; also what appointments they held during life; what sources of income, what provision they left, if deceased, to their families; the names and ages of their children; what friends or relatives they had, from whom any assistance might be expected; or any other information which it might be useful to the Committee to know.

"After carefully considering the answers to these inquiries, the Committee distributed the money intrusted to them as follows, in sums varying from £50 to £5."

It is unnecessary to publish the names and circumstances of any of these cases. The instances relieved were those of the most urgent necessity. For example: "A widow, far advanced in pregnancy, left with *nine* children, the eldest of whom is only eleven years of age, without any means of support." "The widow of Dr. ——, left with seven children, the eldest only fifteen years old, without any means of support: the only persons from whom any help can be expected in this case are two brothers of the deceased, both curates, with large families, and extremely limited incomes." "Dr.—— left a widow and nine children, between six and nineteen years of age; one of the girls is *deaf and dumb.*" Two of these gentlemen died of fever caught during their attendance on temporary hospitals. "Dr. ——, a distressed brother, aged 52, with a

wife and ten children entirely dependent on his exertions for support, who, from being attacked with fever (which was thus introduced among his family), lost his practice, and was reduced to a state of the greatest distress." "The children, ten in number (no widow), of Dr. ——, left without any means of support except a trifling salary which the two elder boys have from petty situations." "To the parent and sisters of Surgeon —— (who lately died of fever), and who were mostly dependent on him for support:"—and so runs this detail of misery and suffering, the whole amounting to twenty-two cases, among which are seventeen widows and ninety-four children; the enumeration would run thus: sixteen widows with sixty-three children; three practitioners, one with five and the other with ten children; fifteen orphans, and four parents and sisters; 116 persons in all, almost totally unprovided for.

We have a word to say to the profession upon this subject. A Medical Benevolent Fund was established in Ireland in the year 1842. To this a number of gentlemen have subscribed £1817; among whom we should mention Mr. Richard Carmichael, whose noble donation amounts to £500. This money cannot, however, be made available until the capital amounts to £2000. Now there are 2000 practitioners, on a rough calculation, in Ireland, who have never subscribed one farthing; and if each of these subscribed even five shillings a year, it would amount to £500 yearly, which would very soon enable the committee who have the management of the Benevolent Medical Fund to distribute a portion of its interest at a period when it never was more wanting. Last year the income amounted to £160, subscribed by forty gentlemen in Dublin, and 101 in the country. We beg leave to direct the attention of our readers, both in England and Ireland, to the Report of the Medical Benevolent Fund in our advertising sheet.

During the last few weeks a document has been placed in our hands, a reference to which, we think, does not appear inappropriate, while summing up the memoir of a physician who died of fever contracted in his attendance at the temporary sheds erected under the superintendence of the Board of Health. We learn from a number of the *Toronto Herald* that the scale of remuneration given to the Canadian medical man for temporary attendance upon the fever lately introduced there from Ireland, has been two guineas per day! and the public press in that portion of Her Majesty's dominions has, with becoming spirit, raised its voice against the injustice of lowering this rate of remuneration to twenty-five shillings per day upon the subsidence of the epidemic. Two guineas a day!—reduced to twenty-five shillings a day!—by the same executive that governs Ireland; awarded for a danger that has proved less hazardous among the profession; in a country where medical education is less expensive, and where provisions and all the necessaries of life are much cheaper than in Ireland. There cannot have been a Medical Board of Health in Canada.

While *poverty*, not will, consented on the one hand to receive the Government pittance in many instances in Ireland, a stern *compulsion* was pursued on the other. Here is an example.

LETTER OF DR. LAW ON THE SUBJECT OF THE BOARD OF HEALTH.

Rutland-square, Jan. 18, 1848.

Sir,—As you took so prominent a part in the movement of our profession relative to the remuneration of the services of medical men during the present epidemic fever; and as it was at your house I signed the requisition for a general meeting of the profession to express itself against the proposed rate of remuneration; and as it was on your application to me, after the proposed meeting was abandoned (and, I must add, in my opinion, most unhappily abandoned), that I added my name to the remonstrance against such remuneration; through no one more fitly than you can I explain, that, to those unacquainted with the peculiarities of my position, I may have appeared inconsistent with the sentiments I exhibited in signing the requisition for the meeting, and afterwards the remonstrance. My connexion with Sir Patrick Dun's Hospital, as Physician in Ordinary, involved me in this apparent inconsistency. This hospital, having room for more patients than its funds are competent to maintain, has always on the occasions of epidemic fever afforded accomodation to patients whose expenses have been defrayed by the Government. A similar arrangement, on the occasion of the present epidemic, was made between the Governors of the hospital and certain electoral divisions, to admit patients, their expenses being provided for. Part of the arrangement was, that these patients should be attended by the physician of the Hospital. The Board of Health was the channel through which this arrangement was to be effected. My colleague and myself determined not to accept the ordinary remuneration of the Board of Health; and, being unwilling, for our personal advantage, to embarrass the pending arrangements, we resolved to attend the additional fever patients without remuneration. This our resolution my colleague conveyed to a member of the Board of Health, who replied that the acceptance of the ordinary stipend was a rule of the Board, and in the event of a refusal of such stipend, that other medical men should be appointed to attend the patients. Having, then, no alternative but either to relinquish my hospital duty, and what I most valued,—the opportunity of witnessing and treating the fever,—or to accept the terms against which I had remonstrated, I felt that I neither compromised my profession nor myself in yielding to a course that I could not control; and, therefore, as part of the staff of the hospital, I acquiesced in an arrangement in which virtually I had no voice, it being conducted entirely by the Governors, who had, if they pleased, a right to command my services as physician to the hospital. In making this statement I have but a single motive, viz., to vindicate myself with the members of a profession, for the honour and real interests of which I will not yield to any other member in zealous attachment and devotion.

Your obedient Servant,

Robert Law, M. D.,
King and Queen's Professor of the Institutes of Medicine, &c.

To W. R. Wilde, Esq.

MEMOIR OF SAMUEL LITTON, M. D.,

Late Professor of Botany to the Royal Dublin Society.

The subject of the following notice was a native of Lancashire. In the year 1795, at the age of 14, he entered Trinity College as a pupil of Dr. Magee, then Junior Fellow, but subsequently Archbishop of Dublin. It was by the advice of that eminent man, who met young Litton in Liverpool, and perceived in him great industry and a pious disposition, that his family were induced to send him to this country to pursue his collegiate course. Dr. Magee was not mistaken as to Litton's industry and talent; he gained during his undergraduate course many premiums and certificates, as well as a scholarship and gold medal: but he was destined to disappoint the intentions of his friends as to the views which they had formed with respect to his future career. Dr. Magee and his father were both most anxious that Mr. Litton should stand for a fellowship, and afterwards enter the Church. In accordance with their wishes, and his own at the time, he read for a fellowship; but, just as the period of examination drew near, a change in his religious views made him conscientiously object to accept a fellowship, or to enter the ministry of the Church of England. We, who knew Dr. Litton in after life, and know his modest, yielding disposition, can well appreciate the mental agony which he must have undergone in resisting the entreaties of a fond parent, and a friend who had proved himself so uniformly attentive to his interest as Dr. Magee. It speaks well for the strength of his convictions, and the sincerity of his purposes, when Dr. Litton maintained his firmness under circumstances so trying.

His father died about this time; and, to Dr. Magee's honour be it recorded, he did not abandon the young man, who not only refused to follow his advice, but, what must have appeared more heinous in the opinion of the future Archbishop, merged towards Dissent. On the contrary, the author of "The Atonement" sustained him afterwards in a contest for the Professorship of Botany in the University, which he lost by the Provost's casting vote. Some time afterwards Dr. Litton was appointed lecturer on Natural Philosophy and Chemistry to the Dublin Institution. On the 26th January, 1815, he became Librarian to the Royal Dublin Society. In 1826 he became Professor of Botany to the latter body; and in 1837 Professor of Botany to the Apothecaries' Hall of Ireland. He fulfilled the duties of both the latter Professorships until his death.

Dr. Litton was likewise a Member of Council, and one of the Vice-Presidents of the Royal Irish Academy, a Fellow of the College of Physicians, and one of the physicians to the House of Industry. He died on the 4th of June, 1847, very suddenly, having lectured as usual on the day of his death, from symptoms simulating a violent attack of angina pectoris.

Dr. Litton was principally remarkable as a linguist. He was intimately acquainted with French, Italian, Spanish, German, and

Danish. He was also well acquainted with the literature of these languages, especially the poetic and dramatic. He possessed a very extensive acquaintance with books generally; not merely with the editions and the other petty objects of interest to the mere bibliographer, but with their contents, and was, in this respect, a valuable acquaintance to any one engaged in literary pursuits. As a botanist he never attained much celebrity, but his lectures displayed considerable reading, and his style was pleasing.

As to personal qualifications, we have known few men so amiable as Dr. Litton. His countenance, manner, and intonation were unusually agreeable. Reserved and diffident among strangers, he was very communicative and humoursome amidst friends. Having known and enjoyed the friendship and confidence of many scientific and literary persons, who are now historically celebrated amongst us, his anecdotes possessed no ordinary interest. But far beyond those qualities which rendered him an agreeable companion, were those which presented him as a just and most honourable man, and an unexceptionable gentleman. We have already stated that at one time he dissented from the Church of England; but he subsequently returned to it.

MEMOIR OF DANIEL MOORE, Esq.,

Licentiate Apothecary.

While the young and the vigorous amongst us have been suddenly snatched away by the ruthless hand of pestilence, the patriarchal have also passed quietly to their graves, during the year we have just gone through. Those who reside on the south side of the city may, from the singularity of the equipage, have been attracted by an old-fashioned yellow chaise, drawn by a pair of aged, but still stout, cob horses, which lumbered along the Ranelagh road, during the fine days of spring and summer, for several years past. The occupant of the carriage was a venerable, grey-bearded old man, who always appeared to us to have come out of the last century, for the purpose of contrasting it with the present. And so he had. The best days of Daniel Moore, the father of the Irish apothecaries, were past and gone before the nineteenth century. We have long desired to write the history of pharmacy in Ireland, and have collected ample materials for that purpose, and the present occasion seemed a fitting opportunity for bringing such a subject before the profession; but, having already exceeded the usual limits of the Number, we find ourselves compelled, from want of space, to defer this duty to another period, when the lives of Lucas or Gifford will afford ample scope for such investigations.

The profession of pharmacy is of very ancient date in Ireland; and we find that in Acts of Parliament so early as the 6th & 7th of William III., the art of the apothecary is stated to be of great general use; and the members of that calling were then relieved from

filling the offices mentioned in these Acts, that they might be enabled "to attend the sick with such diligence as required." At another time we will enter more at length into this subject; but we may mention as introductory to this notice, that in the year 1747 the apothecaries of Dublin were incorporated by Royal Charter, under the name of "The worshipful Guild of St. Luke;" and the first meeting of the Corporation was held on the 25th of April, 1747, at the Mayoralty House in Dawson-street.

The subject of this memoir, the son of William Moore, an apothecary in Ballymahon, county of Longford, was born on the 23rd of October, 1750. After the death of his father he removed to Dublin, and was apprenticed to his uncle, Mr. Clarke, an apothecary in Capel-street, and at that time an eminent chemist. On the expiration of his apprenticeship, Mr. Moore bound himself to Mr. Whiteway, one of the surgeons of Steevens's Hospital, which institution he attended for some time, but he never took out the license of any college. He subsequently became apothecary to the Foundling Hospital, and afterwards commenced business in partnership with Messrs. Lee and Bardin in Suffolk-street. Mr. Bardin dying, the partnership between Mr. Moore and Mr. Lee was dissolved, and in November, 1780, he opened the establishment in Grafton-street, which he subsequently transferred to South Anne-street. His business became very extensive, and he was much engaged in medical practice, being the usual attendant of many of the first families in Dublin. He was four times elected Governor of Apothecaries' Hall, and represented the Corporation of Apothecaries in the Common Council from 1793 to 1807. He was by many years the last surviving original member of Apothecaries' Hall(*a*). In June, 1841, he dined with the Governor and Company, in celebration of the fiftieth anniversary of the establishment of the Hall. He was then in his ninety-first year, and spoke at some length on the occasion of his health being proposed. His first wife was a daughter of Mr. Semple, the architect; he afterwards married Miss Lennon, of Drumrainey, county of Westmeath. His eldest son, John William, was first his partner, and afterwards his successor in business(*b*). This gentleman attained an eminent position in his profession. At the time of his death, which occurred in his forty-third year, he was in the receipt of a large income from medical practice; he also ranked high as a chemist, and his scientific acquirements gained him the intimate friendship of Sir Humphrey Davy, and made his laboratory the resort of Wollaston and other scientific visitants of our metropolis. In 1821 he delivered, at the Viceregal Lodge, before the Lord Lieutenant and his Court, a course

(*a*) In 1826, Messrs. Hastings and Moore were the only two survivors of the fifteen Directors named in the Act of Parliament.

(*b*) He was for many years a Director of the Hall, and afterwards Governor, positions which have now been occupied by three generations of his family.

of lectures on natural philosophy and chemistry, a task for which his good delivery and great command of language admirably fitted him. His second son, Charles, was, on the recommendation of the late Mr. Wilberforce, appointed by Christophe, King of Hayti, Professor of Mathematics and Chemistry in that island, where he remained until the revolution, and the death of the King. William, his third son, settled in London as a physician, and died at the early age of 26. Frederick Moore, LL. D., his youngest son, was for many years one of the examiners in the Prerogative Court.

Mr. Moore died on the 27th December, 1847, in the ninety-eighth year of his age. His funeral was attended to Donnybrook Church by the entire Court of Directors. Mr. Moore had an astonishing memory, and has often afforded us information with reference to the medical men of Dublin in years gone by. His memory, for events of fifty years ago, was, up to a very recent period, wonderfully accurate.

MEMOIR OF RICHARD NUNN, M. D., F. R. C. S.,

Late Lecturer on Medical Jurisprudence in the Richmond School of Medicine(*a*).

When high and aspiring talent, urged on by ambition and favouring interests, has reached the pinnacle of fame, and attracted the world's gaze, mankind shrinks in astonishment when the all-levelling scythe of death mows it down in the zenith of its career, and loud laments are heard that society should be deprived of so much commanding excellence; but the chasm is soon filled. Other and, perhaps, more lofty talent, hitherto slumbering in the shade, springs to the deserted stage, and he who was known to all, admired of all, applauded by all, rarely dwells so long in the memory of survivors as is supposed.

Somewhat different is the feeling left behind, when truth and sincerity, blended with humility and meekness, are suddenly hurried from our sight. Those who have known such an one do not easily forget him. His place is not easily filled in the affections of the little circle who have learned to love him; the tears of the poor, of the widow and the fatherless, of the houseless child of want, will long continue to flow, and those precious drops of unpurchaseable sympathy will

"Still keep his memory green in our souls."

To the latter class belongs the object of the present memoir, Richard Lorenzo Nunn, born in Dawson-street, in this city, in October, 1802. He was the eldest son of Joshua Nunn, a well-known solicitor of long standing in this city, and who has been for many years Law Agent to the University of Dublin.

(*a*) We are indebted to Dr. Bigger, the friend and medical attendant of the late Dr. Nunn, for the *materials* of this Memoir, which we would have published more *in extenso* did our space permit.—Ed.

His school education was obtained from the Rev. William White, of South Frederick-street, who has sent into public life many boys who have afterwards distinguished themselves, amongst whom we may mention Professor Lloyd.

From Mr. White's school he entered the University under Doctor Elrington in 1819, and early in 1820 commenced the study of surgery, for which, from his childhood, he had exhibited a strong predilection, and in this year he was bound apprentice to the late Mr. Todd(*a*). His Bachelor's degree was obtained in 1824; but he did not seek the degree of A. M. till 1832, when the franchise of the University being extended rendered his doing so of service to his friends.

His medical studies were conducted principally in the extensive hospitals attached to the House of Industry; and his anatomical attainments were acquired in the School of the College of Surgeons, and in the Richmond School. Never did a more patient and diligent student embrace the advantages to be derived from the opportunities presented to him; he was a general favourite with his teachers; and we find that for several years the surgical case books of the Richmond Hospital were intrusted to his keeping; and in 1825 he was appointed resident pupil in that institution, and continued to reside there until 1827, not only devoting himself most ardently to the surgical duties of his situation, but, at the same time, cultivating the study of pathology and lunacy, for which he enjoyed more extensive opportunity than most students.

In July, 1828, he passed his examination for the license of the Royal College of Surgeons in Ireland, and immediately afterwards filled the place of surgeon to the Carrick-on-Shannon Infirmary, during the illness of Dr. Leury, where his skill and attention made a very favourable impression. On his return to Dublin he was appointed Curator and Demonstrator of Anatomy at the Richmond School of Medicine, it being the wish of the professors to form an anatomical and pathological museum; and by him the first preparations in that valuable collection were made. Conjointly with these occupations, he gave private professional instruction to a certain number of advanced students, who were preparing for examination at the College.

We come now to a passage in the life of Mr. Nunn on which we touch with sorrow and pain, and which excited in the profession a very deep sensation of friendly commiseration for him, and of disgust at the narrow, short-sighted policy which actuated some parties to sacrifice a worthy individual to their own schemes. The occurrence we allude to took place in the commencement of the year 1834, when Mr. Nunn's name was submitted to the College of Surgeons as a candidate for the membership, the obtaining which would give him a voice in the deliberations of the College. About this

(*a*) See Mr. Nunn's letter on the subject of Mr. Todd's Case of Aneurism cured by Compression, in 1825, published in our third Number.

period, rival parties existed amongst the members, and party feeling ran very high. Mr. Nunn belonged to no party, and was tied to no clique; but on the day of election, when the fatal urn was brought into requisition, and the ballots counted, he who it was supposed had not an enemy in the world was found to have been rejected. The cause assigned for this unworthy transaction was, that Mr. Nunn being attached to the Richmond Hospital and School, was regarded by the College School party as one likely to give his interest to the Richmond party. At all events they black-balled this gentleman, against whose respectability, attainments, and honour, calumny could not breathe even a doubt.

We would rather not revive these unpleasant topics so many years after they have occurred, but refer our readers for information on this subject to a contemporary of the day(*a*), but that we believe much of the same spirit exists, though it does *not now govern*, as of old, in the councils of the College; and that is,—the endeavouring *to legislate for the benefit of the school at the expense of the body*(*b*).

The severe castigation given by the Lancet to the unmanly combination which thus to obtain a monopoly of public rights, aimed at accomplishing its purpose by striking at private reputation, will long be remembered by those who read it. A statement of this case was submitted to the late Chief Justice (then Mr. Serjeant) Pennefather, for his opinion, which was clear and explicit,—that a violation of the Charter of the College had been committed; that Mr. Nunn was duly elected, having had a large majority, notwithstanding the by-law requiring a majority of two-thirds; and counsel advised proceeding by *mandamus*. With this powerful opinion to back him, and contrary to the wishes of his friends, Mr. Nunn, guided by a love of peace, preferred yielding to the insult rather than allow proceedings to be taken. Perhaps his doing so caused a better feeling

(*a*) See The Lancet for 17th of May, 1834.

(*b*) The College School, it is true, is an anomalous condition of affairs, as far as its connexion with the body corporate of the College is concerned; but as a School of Anatomy and Surgery, &c., we believe it has effected much good in this country. We were educated in that School, we know its value, and we are not at all prepared at present to go the length of saying, as many do, that the College of Surgeons should not have a school attached to it, as is the case in London, &c. But we do object to the funds of the College at any time, but particularly in its present embarrassed condition, being appropriated to the support of any of the officers of the School, it matters not whether they be porters or professors; and we feel assured the day is coming fast when such matters will seriously engage the attention of the legislative assembly of the College. We beg distinctly to state that we are by no means hostile to the College School. We admire many of its professors. We think it holds up a high tone of instruction in this city. We believe that it is a means of exciting a just and honourable emulation among the teachers in other schools; but we do now, and have ever considered as a gross abuse, and maladministration of the funds of the College, allocating a sum of money to the maintenance of any particular professorship in that School, while similar privileges are not granted to lecturers upon similar subjects in all or any of the other schools.—Ed.

to prevail, for a short time afterwards, on his name being proposed, tardy justice was done him by an almost unanimous election.

In the session of 1836–7, Mr. Nunn was appointed to fill the chair of Forensic Medicine in the Richmond School.

We now come to that phase of life which reflects the greatest credit on the memory of Mr. Nunn. Wishing to become practically employed in his profession, he undertook the duties of Surgeon to the South-Eastern General Dispensary in 1838, and continued to perform them up to the period of his death. We are not writing a panegyric, but stating the simple truth, when we say that for the nine years during which he attended this institution, he exhibited the most unflinching assiduity, and, under circumstances the most unfavourable, the most consummate skill. But where skill was unavailing, and medicine useless, still this good man never withheld his presence or assistance wherever he thought he could afford the least solace to the sick and afflicted. Early and late he was to be seen in the abodes of misery and poverty, saying little, but doing much; fearless of contagion, though aware of the risk, he braved it in its worst forms and circumstances, supported by the conviction, that whilst he held the office it was a sacred obligation to perform its duties to the letter. Wet and dry, summer and winter, he pursued his melancholy and weary task, ever evincing cheerfulness, though his intimates well knew that his heart was often wrung with silent grief for the sufferings he daily and hourly witnessed. So much respected and loved was he by all the poor people of his district, that the gentleman who has supplied us with the materials for this memoir, and who for seven years laboured side by side with him in a neighbouring district, has never known him to be refused a *post mortem* examination, whenever he desired to investigate the immediate cause of death; so far will kindness, when genuine, avail to overcome prejudice.

The journal of his Dispensary labours is kept up to the 4th of December, 1847 (his fatal illness commenced on the 6th), and by it the number of patients visited appears to be, in eleven months, 2258. Independent of this he gave an hour every morning to such poor persons as chose to consult him at his house.

Since the decease of Dr. Nunn, a document signed by many hundred persons has been sent to his father, expressive of condolence at their mutual loss. The last paragraph runs thus:

"We can truly say of him, that in our sicknesses and our sorrows for many years, he has been our constant, skilful, and ever kind friend, and our deepest regret now is, that the labours of love which he was ever practising amongst us should have led to his untimely end."

It must be remembered that the whole of this wearisome and incessant toil was perfectly gratuitous,—nay, more, it was expensive; the miseries he witnessed could not fail to draw from him something more than the mere expression, "Be ye warmed and be ye filled." His modest deeds were silent vouchers of his humane feelings.

In the Sunday School of the parish he was for many years a diligent and valuable teacher. During the latter years of his life he was an active member of the Committee of the Society for the Relief of Distressed Protestants.

In the year 1842, knowing that the money-jobbers in this city extended their baneful practices amongst the very poorest classes,—tempting them to borrow small sums at enormous interest, to be repaid by instalments, and, when they proved unable to liquidate the first debt, encouraging them to pay it off by borrowing more, till the accumulation of debt and interest placed both them and their securities at the mercy of those harpies, to be duped out of all their little possessions,—Dr. Nunn, with a few friends, seeing the great amount of misery arising from this cause, set about the difficult and hazardous experiment of establishing a Loan Fund on equitable principles, by which honest industry would be encouraged, and the poor taken out of the clutches of those who were preying so mercilessly on their necessities. Accordingly, the South-Eastern Loan Fund was established, which in a great measure answered the designs of its founders; but, amongst all connected with it, no one gave such constant attention to its proceedings, or knew its details so well, as Dr. Nunn, and whatever success it has had is mainly attributable to his constancy and exertions.

Dr. Nunn possessed a good ear and fine musical taste; and in early life gratified both himself and his friends by playing on the flute, in which he arrived at great proficiency. His family are in possession of several musical compositions from his hand, said to be of a very high character. He also wrote some exquisite variations to several Irish airs, which we hope, at some future period, to see published.

To the Medical Benevolent Fund, from its foundation, he was a regular contributor.

Dr. Nunn's extremely gentle and obliging disposition endeared him to all who knew him; and his thoroughly unselfish nature, always ready to bear the burden of any friend, marked him amongst his fellows with a character peculiarly his own, and which will leave remembrances and regrets behind, which time can hardly lessen.

With over-tasked mind and body, he was pursuing his arduous and perilous career, when, in the latter end of November, he was attacked with influenza, which, however, he struggled against, only permitting it for one day to keep him from his duties. Whilst still weak from its effects, he persevered in visiting his fever patients, in the close atmosphere of their tainted chambers. In this weak state, contagion struck home on the poor man's friend. Malignant fever, of a very low type, prostrated all his energies, and, ten days after taking to his bed, he sunk, exhausted. Medical aid proved vain, his worn-out frame could not resist the intensity of the disease, and from an early period his medical attendants felt that there was very little hope of a favourable issue. His earthly career terminated at the age of 45, on the night of the 16th of December, 1847.